

Paris notebook

United we stand

The project work is about to be taken off the walls in the local primary school and the plans handed over to the *conseils*, in readiness for the summer holidays. The end of another school year; and a further stage in our adaptation to France. It is now almost natural to regard the minister of education as a public enemy and to shrug our shoulders gallantly at any chance of change.

Before coming to live in France it was hard to understand why such a reasoning people should be so consistently unreasonable about education. Or why every government



policy should be so bitterly contested and then put into effect all the same. But the longer we are here the more the obvious explanations seem too important to ignore.

Power really is highly concentrated. And it is held almost permanently by the same groupings. And we are aware of it. There has been only one government this century without its participation by all the political parties. It is impossible for political philosophies and political patronage to alternate—and the elections of 1978 put another nail in that coffin—is it surprising that opposition is ritualized and apparently extreme?

Take the Haby reform. M Haby has just been replaced as minister of education. But as readers of TES foreign pages will know, he launched a project in 1975 aimed at modifying the highly competitive character of French state education. The law proposed more flexibility in primary schooling, especially for children learning to read and write; common and lighter secondary courses up to the age of 14 to equip all children with a "minimum baggage of culture";

an end to the system of repeating a class for those who failed their tests; and a system of remedial support. M Haby also apparently wanted to introduce some autonomy into the system. The directors of schools should henceforward have more control over resources. There should be joint parent-teacher advisory committees in primary schools, following the model set up in the secondary schools after 1968. One might have expected some sort of welcome from a teaching force whose majority is committed to more egalitarian policies. Not a bit of it. Because they are left wing—and a *Le Monde de l'Éducation* poll before the elections showed them much more left wing than the population as a whole—they do not trust the minister's intentions. And they know that he does not trust them.

So the only politically effective counter-strategy is to concentrate opposition into the period between the introduction of a law and a decree. And so it was: there was ardent opposition to Haby from all sides, not just the political minority parties, but from almost all the teachers and parents organizations and even the inspectors.

In fact the opposition did well. By last September when the law should have been brought into effect the only bits covered by decree were new curricular programmes for the first year of primary school and the first year of secondary school, and the introduction of parent-teacher advisory committees. The new minister, Christian Beutler, started on what would seem the hopeless task of trying to win favour by announcing that he himself would not pursue another controversial Haby idea for a *dossier scolaire* which would follow pupils through their entire schooling. It had been looked on by parents and teachers organizations with exactly that sort of distrust that the Transport and General Workers has for the lorry driver's black box.

One effect of dividing the world into natural rulers and permanent victims is that those of us who use the system or work in it feel we have a common enemy to attack before we need to fall out among ourselves (though that is not excluded). Just before Christmas, a group of parents and teachers called a meeting so that we could be told about the elections for the Haby parents committees, and given the head teachers' views. None of that defensive attitude about parents I remember in English teachers. Such a problem, said our *conseiller directeur*. He had been in touch with the ministry but they could not guarantee that the election papers would be there in time. He would ring up our local inspector, the unfortunately named M Plaguet. There were choices all round: such a warm feeling of us against them.

That crisis was resolved. The election for the committees took place. But it so happened that the primary teachers' union, as part of its pay-claim tactics, decided to boycott these new committees.

Pulling power

Another noticeable effect of the centralized system is its direct effect on an individual teacher's career. A teacher in France has to get an inspector's permission to move. The name may just go through on a list. But a teacher may have to have an inspection. A 30-year-old friend of mine would seem to be the type that an English school would love as a head of department or even a deputy head.

Like so many French teachers he has been drafted to Paris. Also typically he wants to go back to his native Midi. The inspector's report, with its refusal implicit, is 40 lines long. At least 30 are concerned with a description of the grammatical exercises in the class the inspector observed. There is one on Rémy's good relationship with his pupils.

It is not surprising that in the face of such rigidity many try to move by an alternative route: the *piston*. Pulling strings is I suppose the English equivalent. Christian appeared to have the strongest strings in the business. He asked one of his university professors to help. Delighted, came the reply. I have written to a friend, a Gaullist ex-minister. Here is his letter showing that your name will go forward on one of the lists which, as part of the normal cooperation between the majority parties, he can expect M Haby to accept. Unfortunately the hostilities then erupted between President Giscard and his prime minister Jacques Chirac, and with Chirac's departure as prime minister the cohesiveness between the respective parties. At such moments such letters go into the waste paper basket. Our friend is a victim of *force majeure*.

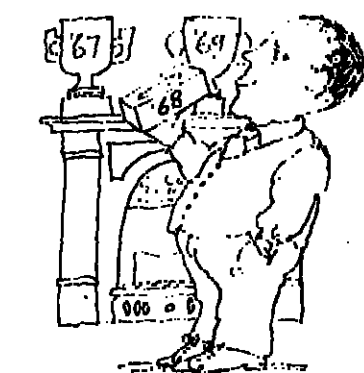


After '68: no more certainties

As John Gorton remarked in his piece about 1968 (TES, May 5) the French are obsessive about anniversaries. So by the chance that we are now 10 years on, we have been reliving all this term the nights of the student barricades, and what seems to us the much more awe-inspiring, general strike. So unending has been the analysis that it is now fashionable to say that the

patient should be taken off the couch. But I have yet to meet the French person who is really cool or cynical about 1968. Disappointed at one extreme, relieved at the other. But not cool. 1968 is a constant reference point for understanding France.

So, a university professor who suspects that he does not have the reputation he thinks he merits, or who explains that he was developing his work on student alienation before 1968. Our neighbour, equally earnestly, explains that she could not, would not, send her children into the state system after 1968. "There is no discipline left."



Indeed when a large part of an intellectual élite of a generation is caught up as passionately as thousands were in 1968 it seems unlikely that it can have no effect. Were not the *soixante huiters* teachers—and the *soixante huiters* parents—bound to bring permanent change into the schools? Some of these famous slogans? "It is forbidden to forbid... He realistic, demand the impossible... Give imagination to those with power... Professors, you are old and so are your ideas... Wouldn't they explode the school concessions of 1968, the 10 per cent of time free from the official programmes and the committees of parents, pupils and teachers which were set up to participate in school government?"

Le Monde de l'Éducation, in a survey of what has happened since 1968, was hued out to find positive examples of institutional change. Not the high schools. And teachers had lost their beliefs, but that once again the power structure was impermeable. The most notable change was that former certainties were now uncertain. "I wouldn't assume that I could teach my philosophy," says the high school teacher in the cartoon to a group of his most adult lycée students. "I'll just tell you two or three things I know about it."

There is also a widespread view that many of that generation are putting their energies elsewhere. They cannot fight the institution from the inside. Some of them start alternatives.

It is only on a tiny scale. There are 20 or so "free" schools (English ones) and a few educational communes. But they are part and parcel of a wider trend to try all sorts of social experiment.

Basic differences

Of course it is ridiculous to say that there has been no change in the state system, or that education is stuck in the past, or that the English like to leave it some time ago. In the local primary school the French was adequate, and to their London primary school private or bilingual schools.

There really is project work in the walls. The headteacher immediately welcoming, and the children to come around before school so they would know what they were to do. It is fairly easy to see and to the class teacher's time one of our children's disconcerted when he saw that Wellington made an error in describing the battle at Waterloo.

After a year, however, the underlying structures are clearly. We see how much sons are concerned with in the French view of Wednesdays are there to be or pointing and pointing younger child, just before first year of compulsory and little *dictées* about the to the office and grandparenting the salad. The fact that all the class picture cards for short, aware that they are already marked with A, B and C, older child, into *surveys* next year, the tradition is much more obvious. The monthly tests in all their titles. They spend too working out the results several decimal points and end up within two or three of each other. They may be ing for limited but they do the building but they do not the system.

So it is a curious thing for it is not best to be a French follow up. It is just that school is not so important. And the pupils, like French teachers, many of their energies directed

The council itself has agonized about what it should or should not do to get its project materials across to the schools. How much effort should go into what in the jargon of the curriculum developers is called the "dissemination" phase of any project?

Of course, the actual development of the materials themselves has increasingly involved a network of participating schools and teachers which can also have an important part to play in the dissemination of the project's ideas. But there are strict limits, as things now stand, to the amount of in-service training which the Schools Council can engage in. Early on, the Department of Education and Science and the local authorities agreed—that responsibility for in-service training belonged to the L.E.A.s and the H.M.s and not to any major extent to the council.

The publication (page 5) of the council's survey of "the impact and uptake" of materials for primary schools, underlines the uneven nature of the dissemination process. Some projects like Nuffield Junior Maths have swept the board; many others have reached less than 10 per cent of schools. This uneven pattern of uptake is matched by an equally uneven flow of information: in the case of those projects which have failed to make progress, many heads and assistant teachers have not even heard of them, let alone examined them carefully enough to make a considered decision on whether to use them.

It is difficult to know what conclusion to draw from this. The authors of the survey tend to regard this as a failure of publicity. It may also reflect the intrinsic interest and value of the projects—that is, that people will get to know about some projects by one means or another, including the unplanned and unplannable recommendation by word of mouth, while no amount of printed matter can do this in respect of others. In the end,

Read any good books lately?

One of the nagging criticisms of the Schools Council over the years has been that it has failed to make an impact on the classroom commensurate with the money and effort devoted to its curriculum development programme. Behind this criticism are a number of unanswered questions. It is not clear what impact the critics think the council should have had—what "par for the course" ought to be. And there is an ambivalence about the council's role which revolves around the oft-stated denial that anything put out under the council's name should be taken to have any prescriptive authority but should stand or fall on its merits with teachers free to take it or leave it.

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content to "allow his extra power which will count that much. (b) The alternative to play a game to hold the White's QR is to play 7...P-B3; 8...P-K3; 9...P-K3; 10...P-K3; 11...P-K3; 12...P-K3; 13...P-K3; 14...P-K3; 15...P-K3; 16...P-K3; 17...P-K3; 18...P-K3; 19...P-K3; 20...P-K3; 21...P-K3; 22...P-K3; 23...P-K3; 24...P-K3; 25...P-K3; 26...P-K3; 27...P-K3; 28...P-K3; 29...P-K3; 30...P-K3; 31...P-K3; 32...P-K3; 33...P-K3; 34...P-K3; 35...P-K3; 36...P-K3; 37...P-K3; 38...P-K3; 39...P-K3; 40...P-K3; 41...P-K3; 42...P-K3; 43...P-K3; 44...P-K3; 45...P-K3; 46...P-K3; 47...P-K3; 48...P-K3; 49...P-K3; 50...P-K3; 51...P-K3; 52...P-K3; 53...P-K3; 54...P-K3; 55...P-K3; 56...P-K3; 57...P-K3; 58...P-K3; 59...P-K3; 60...P-K3; 61...P-K3; 62...P-K3; 63...P-K3; 64...P-K3; 65...P-K3; 66...P-K3; 67...P-K3; 68...P-K3; 69...P-K3; 70...P-K3; 71...P-K3; 72...P-K3; 73...P-K3; 74...P-K3; 75...P-K3; 76...P-K3; 77...P-K3; 78...P-K3; 79...P-K3; 80...P-K3; 81...P-K3; 82...P-K3; 83...P-K3; 84...P-K3; 85...P-K3; 86...P-K3; 87...P-K3; 88...P-K3; 89...P-K3; 90...P-K3; 91...P-K3; 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It is hard to convey to those outside the United States the intense and often emotional reaction Americans have taken in the Black Caucus to the Supreme Court's decision on "affirmative action" in the nation's highest court, because no other country has a shadowy policy race which has produced such bitter racial discrimination.

However, leaders of America's liberal and civil rights organizations, such as the National Association for the Advancement of Coloured People and Americans for Democratic Action, are worried because they see affirmative action from the general public and national politicians seems to be

One is not through the compilation of a book at the generation and sales of books. It is a long process. The first difficulty in writing the book arises from a feeling that only superficially, in reading the report, do I recognize the industry as the one in which I work. Third factors create this feeling.

One is not through the compilation of a book at the generation and sales of books. It is a long process. The first difficulty in writing the book arises from a feeling that only superficially, in reading the report, do I recognize the industry as the one in which I work. Third factors create this feeling.

Whoever designed the cover of the NUT's commentary on the Taylor Report unwittingly had the union's symbolic blazing torches setting light to the title, *Partnership in Education*.

Inside its blazing red covers this commentary, together with that of the National Association of Head

to define details of school dress as part of the general discipline of the school) in which the spokesman of the teacher unions are increasingly isolating the profession not only from a large body of lay people, but from most other professional and trades union groups too (but to mention their protest against their colleagues in Europe and even Scotland, now).

At the root of these three "symbolic" issues is a symbolic challenge to the school administration and management attempts to turn away from the social and cultural care of the sciences rather than to the increase the mystification of learning and inhibit the involvement of parents and pupils.

At the root of these three "symbolic" issues is a symbolic challenge to the school administration and management attempts to turn away from the social and cultural care of the sciences rather than to the increase the mystification of learning and inhibit the involvement of parents and pupils.

Corporal punishment is another of these symbolic issues (like the right

by Bert Lodge

With the boroughs collectively raising their own money for education a chief cause of concern about that the IEA was able to provide an unequalled career structure which enabled the authority to attract the best of the profession.

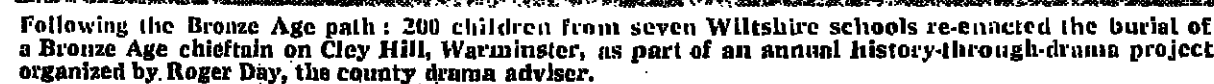
by Stephen Cohen

The meeting was told by Mrs. Williams that there was no immediate prospect of legislation on nursery education. Provision was being concentrated in inner city areas, she said, and she was optimistic about local authorities becoming more willing to provide nursery places.

The union had put to her several of its annual conference resolutions for comment. Mr. Fred Jarvis, NIIT

More than half of the association's 10,000 playgroup members answered the questionnaire from which the latest figures are taken. Twenty-nine per cent of the playgroups now provide some kind of

And it is estimated that registered playgroups are now catering for 10,000 children, or four per cent of the four-year-olds. (In 1966, 10,000 was a group.) And two per cent of the total population of schools now may be in home-based playgroups. The total number of schools now receive such playgroups, however, covers one per cent of three to four years.



Although some subjects might require alternative exam papers and tests in various forms and in varying

The existing eight GCE and 16 CSE examination boards themselves should negotiate, as far as possible, the formation and structure of new exams.

mostly incurred by syllabus development, which could be about £500,000 a year for three years.

Diana Geddes

The Open University is to get a government grant of £90,000 to develop a correspondence course, linked to television and radio programmes for school governors and parents.

The grant, from the Department of Education and Science, will be used over the next three years to compile the course and to assess its effectiveness.—*THES.*

Two thirds tardy

Practise Use

That is the basic sequence used in the CoRT Thinking lessons that set out to provide the

on point

cent of them catering for a "better off" professional population, 50 per cent "mixed" professional and working class, and 8.5 per cent

At least one member of staff was a trained teacher in 32 per cent of the playgroups, and 13 per cent had a staff member with an NNEB certificate. At least one member of staff had done some sort of specific training in 85 per cent of playgroups.

Supervisors are paid, on average, £1.91 per session—about 60p an hour. Three quarters of the playgroups charge 20-40p per session.

Facts and Figures is obtainable from PPA publications, Alford House, Aveline Street, London SE11 5DR, price 20p, including postage.

Virginia Manks

That is the basic sequence used in the CoRT Thinking lessons that set out to provide the awareness, framework, strategies, tools and concepts that come together to form the skill of applied thinking.

The CoRT lessons are the most widely used and tested method of teaching thinking either on its own or as part of some other subject (for example in the teaching of English Plus).

There are six sections: CoRT I (breadth), CoRT II ('organisation'), CoRT III ('interaction'), CoRT IV (creativity), CoRT V (information and feeling), CoRT VI (action). Almost all the lessons can be used independently but the whole set forms a basic resource which every school should have.

Think-Links and the Junior Course in Thinking are also available for the younger age range.
Details from Direct Education Services Ltd.,
1 Alfred Street, Blandford Forum, Dorset DT11 7HZ.

National Association of Advisory Officers for Special Education workshop, Reading

We need you, Warnock tells advisers

Special education advisers received a strong boost to their morale from the top members of the Warnock Committee at their association's first annual workshop held at Bulmershe College, Reading, last week-end.

Mrs Mary Warnock and Mr George Cooke, chairman and vice-chairman of the committee which reported on children with special needs in May, stressed the importance of the advisers' role in getting the committee's recommendations implemented.

"Without the teacher training programme, the rest of the world in the report are not worth a penny," Mrs Warnock said. The task of advisers, especially with in-service training, would be particularly onerous. "I seriously don't believe anyone could have thought that section 10 could come into force without extra financial help. If the Government cared to read the costing exercise on the training

programme in the report, it would have a fair idea of what kind of grant should be earmarked for local education authorities. She did not believe there would be a sufficient programme of in-service training without a specific allocation of money from central government.

She hoped teachers would put pressure on L.E.A.s to provide courses in special education as the extra qualification would mean a salary increase. The committee thought the debate on integration had been oversimplified and wanted to make people's thinking on the subject more complicated. There were not two classes of child—the handicapped and non-handicapped, nor two kinds of education—special and ordinary. One child in five would need special help at some time.

Mr George Cooke told the advisers not to underestimate their influence. "If you don't believe what is in the Warnock Report is right, necessary and capable of

achievement, then no one else will. If you don't believe in Warnock then Warnock will die." Special educationists should fight for resources for their world just as academics were arguing for money for universities.

He had found a powerful argument in a "pay now, save later" approach. "If we give help and support to children with special needs at the earliest time, give them better teachers, better opportunities in further education, resources for effective integration and research, we shall save later in terms of greater personal dignity, enjoyment of life; there will be less strain on the family and less dependence on social and health services."

The Warnock Report contained nothing dramatically new, nor was it excessively ambitious. It was only seeking fulfilment of what was envisaged even before the 1944 Education Act. Many of the recommen-

dations did need a lot of money for their implementation but were in line with government policy already adopted. The concept of 20 per cent of children needing special help was 30 years old, and the training of specialist teachers had been government policy for 20 years. If the Court Report were put into effect it would solve a lot of Warnock's problems.

The Warnock Report takes us beyond the reaches of Section 10, Mr Freddy Green, IMI for special education, told the conference. A child can be put in a special class or unit in an ordinary school and this would satisfy the requirements of Section 10; but the education he received might have none of the qualities of integration as seen by the committee. Ordinary and special schools should be seen as complementary, providing mutually supportive ways of meeting children's educational needs, not rival forms of provision.

Diane Spencer reports

Early-morning television plea by heads

by Carolyn O'Grady

Two thirds of secondary schools in England and Wales would like to have schools broadcast programmes between 8.50 and 9.30 in the morning to enable staff and technicians to record programmes before classes begin. This is the conclusion of a report sent to the broadcasting authorities by the Schools Council for Wales, Scotland and Northern Ireland last week. With the extra morning time, the report says, about half of secondary schools would be able to use an average of more than two more series each.

The report is based on a questionnaire survey organised by Mr M. Scott Archer, headmaster of Brynmawr Comprehensive School in Gwent and a member of the Schools Council. The survey was carried out mainly among members of the Secondary Heads Association during May, 1978. It reached about half the secondary heads in England and Wales. Of these about half have so far replied.

About 80 per cent of respondents had VTR or VCR equipment. Of those using video recorders 83 per cent said they used the schools' programme broadcast between 8.50 and 9.30 and about 60 per cent would be able to take advantage of an average of more than two programmes in this way.

In his introduction to the questionnaire Mr Scott Archer argues that many schools are restricted in their use of Schools Council programmes. About half of Britain's secondary schools have only one videotape or cassette recorder and playing back of a tape prevents the recording of another programme at the same time. Translating two existing programmes into a single service would provide a valuable extra service.

More than £1m has been spent on devising new ways of teaching primary school children in the past 12 years. In the case of more than half the projects, only a handful of schools are using the books, equipment and techniques developed.

A report from the Schools Council yesterday reveals that in spite of the many thousands of pounds given in grants to research projects, many of them are flops because teachers do not know of them.

And headteachers are blamed for not keeping up to date with the latest developments in teaching. Most of them had never heard about or read many of the Schools Council publications. Primary teachers are largely unaware of the existence of the reports, working papers and research studies, the report says.

The majority of primary headteachers are unaware of all but three of the 25 publications designed for them and their schools.

"If these headteachers and teachers are the intended audience for these publications, and judging by statements upon the publications themselves this is certainly the case, then this is a less than satisfactory state of affairs," the report says.

Some of the teachers who were interviewed for the report said they were surprised at the volume of work the Schools Council had done. "It shows how little one knows," one said.

This kind of comment was often linked with induced feelings of inadequacy, embarrassment, isolation and even guilt, the report says. One teacher felt "thoroughly ignorant". Another said: "Made me feel out of touch."

A random sample of 107 primary schools were visited by the research team and a postal survey of 308 primaries was also carried out. The

Is it teacher apathy?—lack of publicity? Whatever the reason, a high proportion of Schools Council projects for primaries are not being taken up. Stephen Cohen reports

Where have all the projects gone?



Some of the project material on offer.

aim was to see how successful the Schools Council projects were, what was their impact on schools and how many took up the ideas. Nearly 2,300 teachers took part.

Since 1964 the council's curriculum development work has been promoted by funding projects—more than 260 so far—which widen the choice of curricula and teaching methods. But if a teacher is to have choice then he or she must first know what is on offer, the report says.

"Over the past 14 years curriculum developers have striven to inject into schools new ideas of what to teach and how to teach it. New attitudes have been promoted, new values formed and new recognition of old values encouraged."

In order to communicate these ideas, especially after the development team disbanded, the ideas have been embodied in a range of materials. The range of materials is enormous: books, teacher guides, pupil texts, work sheets, work cards, films, flannel graphs, slides,

overhead projector transparencies, audio tapes, video tapes and cassettes, spirit masters for duplicators, apparatus, demonstration equipment, computer programs, tests, games, television and radio programmes, and so on.

But after a while, after five years, after a decade, the ideas are absorbed by teachers' training courses and syllabuses. The books become so much a part of knowledge they are laid to one side. The apparatus is rewritten."

The report makes clear that although schools say they do not use Schools Council projects it is possible that they are using the techniques. In some cases a new teacher may be unaware that the curriculum in mathematics in the school he or she joined two years previously was, six years ago, designed deliberately to incorporate the suggestions of Nuffield mathematics.

Although the general findings of the survey reveal a low take up of

Alphabet, was the work of Sir James Pitman, and the last, Mathematics in Primary Schools, was written by Miss Edith Biggs, a member of Her Majesty's Inspectorate. It is known in the trade as "Biggs' Bible".

Of 107 schools visited, 50 had materials for Science 5-13, 47 had Breakthrough, 28 had Nuffield Junior Science, 27 had Nuffield Mathematics, 12 had "Biggs' Bible", and 12 had En Avant.

Only two out of the eight must popular projects were started by the Schools Council. Two were set up by Nuffield and eventually taken over by the council. The most widely used project, SRA Reading Laboratories, is imported from the United States of America. "Biggs' Bible", which sold 75,000 copies in its first year of publication, 1965, and has been in the bestseller list for years afterwards, was published by HMSO. Of the eleven most under-used projects, nine were financed by the council.

The Schools Council has been worried for a long time about the success of its curriculum development work. Although the projects are developed by teachers, approved by teachers and tested by teachers, the low take-up indicates that information about them is not getting into the school.

For the past two or three years all new projects have been given extra funds for dissemination so that the good news is spread about. And since 1976 leaflets about the council's work have been sent direct to primary schools. Before that the information went only to local education authorities and teachers' centres.

Impact and Take-up Project, a first report, Schools Council, 1978.

London goes ahead with £7 grants

Grants of up to £7 a week will be paid by the Inner London Education Authority from September 16 to 18-year-olds who stay in full-time education. The scheme—You Stay, We Pay—will be introduced before the Government's new Education Act, which is very similar. Sheffield has already announced its own version.

At the moment, Mrs Shirley Williams, the Education Secretary, is discussing her plan with local authorities and within the Cabinet. It has been suggested that the national scheme would pay up to £7.50 a week.

Inner London's plan will add another £515,000 to the £735,000 it now spends on education maintenance awards. Present grants are

worth a maximum of £4.38 a week and are paid direct to pupils.

The authority is also making the means test more generous to bring more families into the scheme. The level of grant depends on parents' weekly income after deductions for rent, rates, mortgage and other outgoings, and on the number of children.

A family with one child, will get a grant when the net weekly income is £43 or less. At £34 or less, the maximum £7 grant will be paid. For each extra child in the family, the authority will allow another £5.15 of parental income. A family with three children, for instance, will be entitled to the full grant if the net weekly income is £55.30 or less.

Sir Ashley Bramall, leader of the ILEA, said the Government's scheme was likely to be introduced next year. "But we have decided to take an initiative immediately and improve our own scheme."

The authority has been worried by the disparity between its grants and other forms of aid to young people who are unemployed or being trained. Now the new ILEA grant will receive from April, will be similar to supplementary benefit. From November, this will be £11 a week for unemployed teenagers.

Almost 35 per cent of inner London pupils decide to stay on for at least a year at 16. About one in eight qualifies for a grant.

About 80 per cent of respondents had VTR or VCR equipment. Of those using video recorders 83 per cent said they used the schools' programme broadcast between 8.50 and 9.30 and about 60 per cent would be able to take advantage of an average of more than two programmes in this way.

In his introduction to the questionnaire Mr Scott Archer argues that many schools are restricted in their use of Schools Council programmes. About half of Britain's secondary schools have only one videotape or cassette recorder and playing back of a tape prevents the recording of another programme at the same time. Translating two existing programmes into a single service would provide a valuable extra service.

Where staff hear about them...

Teachers and heads were asked where they obtained their information about the projects they knew best, how they first came to hear about them and what information made them decide whether to use them.

For teachers, initial training was the main point of contact. But the picture was different for heads. In-service courses were paramount, a service of the fact that more than 85 per cent of primary head teachers were trained as teachers more than 12 years ago, many before the Schools Council was created.

"The decision whether or not to use a project is not so much based on information, upon additional information, being available, as much as being a matter of school policy. Teachers do, of course, take the quality of the project's offerings into account."

Head teachers, on the other hand, take even more notice of the quality of what is offered but also seek further information from course organisers and other schools.

The most useful source of information for teachers was staffroom conversations. Teachers' centres and resource centres came next. Then conferences, short courses and research schools. Book exhibition and research journals.

Head teachers' most important source was a short course or conference. This was followed in priority by the Schools Council magazine Dialogue, local authority advisers, other heads, local working parties and discussion groups, their staff and publicity catalogues.

One of nine projects is known by 42 to 80 per cent of head teachers and, with the exception of the latest Teaching Alphabet, are reportedly used by some 15 to 50 per cent of schools.

The second group is known by 7 to 30 per cent of heads and reported use is in less than 10 per cent of schools. The less successful projects include a set of sets of slides with tape recorded commentary to encourage discussion and

Project	Cost to Schools Council	Heads don't know of %	Teachers don't know of %	Schools using %	Published
SRA Reading Laboratories	—	5	29	49	1968
Breakthrough to Literacy	unknown	3	8	46	1970
Nuffield Mathematics	—	4	15	39	1967
Science 5-13	146,700	28	54	36	1972
Mathematics in Primary Schools	—	18	43	32	1965
En Avant	unknown	27	44	21	1966
Nuffield Junior Science	—	16	37	17	1965
Communication skills in early childhood	189,300	29	49	16	1976

Project	Cost to Schools Council	Heads don't know of %	Teachers don't know of %	Schools using %	Published
Man as a course of study	—	80	93	1	1970
Development of scientific and mathematical concepts 7-9	19,300	77	88	2	1975
Environment	48,000	79	91	3	1974
Concept 7-9	55,000	74	81	34	1972
History, geography and social science 8-13	161,500	68	86	3	1975
ITA	—	7	9	4	1961
Music education of young children	90,700	61	80	4	1978
Check-ups	55,000	59	81	4	1970
Scope	130,000	77	77-83	3-7	1969
Environmental studies	67,000	68	85	8	1972
Art and craft education	40,650	63	81	10	1974

The report says it may be doubted whether teachers see themselves as being the audience for Schools Council publications and it might be advisable to make course organisers and L.E.A. advisers the prime audiences in the first instance.

The report suggests that the council might consider buying advertising space in the educational press to publicise its projects and producing a catalogue of its own.

The projects listed in the research report fall neatly into two groups. One set of nine projects is known by 42 to 80 per cent of head teachers and, with the exception of the latest Teaching Alphabet, are reportedly used by some 15 to 50 per cent of schools.

The second group is known by 7 to 30 per cent of heads and reported use is in less than 10 per cent of schools. The less successful projects include a set of sets of slides with tape recorded commentary to encourage discussion and

self-appraisal by art and craft teachers.

Check-Ups: Used by teachers who want to confirm the progress made by pupils using the Nuffield Mathematics scheme. Really only an adjunct to another project.

Music Education of Young Children: Designed for 3 to 11-year-olds and aimed at finding out how children learn in music, and to produce guides and materials to help teachers. The first wave of publication has only just come on the market. History, Geography and Social Science 8-13: The aim was to produce materials and handbooks linking the subjects.

Scope: Designed to provide practical help to schools admitting a large number of immigrant children with language difficulties. Concept 7-9: Begun in 1967 and ended in 1973, Scope was designed to develop materials to teach English to children of non-English speaking immigrants, mainly West Indian.

National Festival of Music for Youth

Fairfield Halls, Croydon, July 14-16

- Participating groups will be:
- JULY 14**
- St Dominic's Infant Ensemble, London NW5
 - Crown House School, High Wycombe
 - Abey Junior Wind Band, Abey, Dorset
 - Long Rillings Junior School Orchestra, Brentwood
 - Ravenshoe County Middle School Junior Orchestra, Camberley
 - Burton Barton Middle School Junior Ensemble, Dorchester
 - Jonny's Junior Accordionists, Colchester
 - Charles Charnham, Northampton
 - Derry-Fellin Brass Choir, North
 - Cully Music Centre Percussion Ensemble, Aberdeen
 - St Andrew's Junior School Percussion Ensemble, Walton-on-Thames
 - Kilnchurn Wals, Aberdeen
 - Millon Junior School, Cumbria
 - Corbridge School, North
 - Crownwell Sunday Night Group, London N6
 - Rugby High School Percussion Ensemble
 - Richmond C. Primary School Handbell Ringers, Bristol
 - Elmwood Steel Band, Croydon
 - Wotton Park Boys' School Electronic Music Group, Southampton
 - Kingsdale School, London SE21
 - Walsall Youth Jazz Orchestra
 - Henry Compton School, London SW6
 - Darlington Youth Jazz Band
 - Doncaster Youth Jazz Orchestra
 - Ruton Youth Jazz Band
 - Coopers School, Modern Jazz Quintet, Chislehurst
 - Francis Bacon School, St Albans
- JULY 15**
- William Maudesley Secondary School Brass Band, Chesham
 - Northamptonshire County Youth Orchestra
 - Darlington Youth Brass Band
 - Redcliffe Youth Brass Band, Tressle
 - Redbridge Youth Brass Band
 - Barnet School Rhythmic Band
 - Swinton School Rhythmic Band
 - Bedford Octet, Kempston
 - Madeley Court Chamber Choir
 - Surry County Wind Quintet
 - Chelmer Valley High School, Chelmsford
 - St Anne's Convent School String Quartet, Southampton
 - King Edward VI College Wind Quintet, Haverhill
 - Southampton Pure Quartet
 - Walls Cathedral School Piano Trio
 - St Andrew's School String Duo
 - Dux-Fell School Orchestra, North
 - Berrill Academy Orchestra, London
 - Piranella Orchestra, Epsom
 - St John's Church Wind Band, Haverhill
 - Rugby High School Orchestra
 - King Edward VI College Orchestra, Southbridge
- JULY 16**
- Croydon Schools Centre for Wind Players, 1st Orchestra
 - Brent Youth Concert Band
 - Bromley Schools Concert Wind Band
 - Sirry Centre Wind Band
 - High Wycombe Music Centre Concert Band
 - King Edward VI College Wind Band, Southbridge
 - King Edward VI College Wind Band, London
 - Synth Leek Junior Music Centre Recorder Group
 - Marden Bridge Middle School, Witley, Jay
 - St. Onan's Primary School Recorder Ensemble, London W9
 - Honley High School Recorder Group, Huddersfield
 - St. Dominic's Recorder Group, London
 - Chelmer Valley High School, Chelmsford
 - Stonham Middle School Wednesday Players, Guildford
 - St. Onan's Primary School Recorder Ensemble, Guildford
 - East Leaze Schools' Music Centre Recorder Ensemble
 - Coads Infant School, Gwent
 - Adelphi School Recorder Group, Hereford
 - Rutland Junior Recorder Band, Worcester
 - King Edward VI Grammar School Orchestra, Chelmsford
 - Brighthelm Youth Orchestra
 - Northamptonshire County Youth Orchestra
 - Chelmsford Youth Orchestra
 - Orchestra of South Northamptonshire Music School
 - Chelmsford Youth Orchestra
 - Wotton Park Boys' School Orchestra
- Information from Windward Associates, 22a Kings Road, London SW3. 01-730 2628

THE SUNDAY TIMES

NATIONAL SCHOOLS CHESS TOURNAMENT 1978

The final matches will be played at the St. Ermin's Hotel, Caxton Street, Victoria on Wednesday, July 12th 1.00 p.m. to 6 p.m. and Thursday, July 13th 10.00 a.m. to 3 p.m.

ALL SPECTATORS ARE WELCOME (Admission Free)

Enquiries to: Stephen Parnell at The Sunday Times 01-837 1234

Mrs Williams talks to the first NCLE conference

'Yawning despair' over languages

by Bob Doe

"Yawning despair", was how Mrs Shirley Williams described her reaction to the present O and A levels in modern languages to the first National Congress on Languages in Education in Durham this week.

"The present O and A level syllabuses are quite off-putting to young people who do not have a language bent", said the Education Secretary. They are almost calculated to put the average child off language learning altogether.

Since the 1960s the proportion of children studying a foreign language had risen from 35 per cent to 80 per cent, but the numbers taking O and A levels had actually fallen.

She suspected that the curriculum review being carried out by the DES would show that some authorities were not really trying to see that children had the chance to study a foreign language. She wanted two foreign languages to be the norm.

To encourage young people to take language learning more seriously at school, modern business and technical education courses in foreign languages and higher education should include an element of language learning.

Mrs Williams saw languages as an essential part of general education. Our understanding of our own language and society is narrowed by the failure to know about other languages and societies", she said.

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Gloucestershire given deadline

by Bert Lodge

Gloucestershire education committee has been given two months to revise the timing of its plans for comprehensive schooling in Gloucester and Cheltenham.

Mrs Shirley Williams, Education Secretary, told the authority last week that although the proposed arrangements were satisfactory she did not accept the argument that reorganization should be put off until 1981 to allow large-scale building work to take place. With new buildings the schools would be on split sites, the authority claims.

While accepting this, the Education Secretary said that split sites are not sufficient reasons for delaying the introduction of comprehensive education. She has asked to see by August 23 revised plans which will allow selection to end in Cheltenham by 1979 and in Gloucester by 1980.

Mr Richard Clark, chief education officer, said this week he had asked the Minister for a four-week extension of the deadline. This was because of practical difficulties arising from the time of the year. Traditionally the county council did not meet in August and the new development would require

special meetings of both the council and the education committee.

When Essex education committee meets on July 17 it will be urged to tell the Secretary of State that it cannot meet her deadline to end selection in Chelmsford by 1980. The schools subcommittee has accepted arguments from the governing bodies of both the County High School for girls and King Edward VI School for boys that they need more time.

The church authorities who plan to convert the girls' school into a mixed comprehensive say buildings should be completed before 1981. King Edward VI School, which has opted to go independent, claims it needs two clear years from the time Mrs Williams gives final approval of the decision.

Any recommendation by the education committee to challenge the deadline set by the Education Secretary must still go before the full council which does not meet again until October. Mrs Williams had asked that any new proposals be submitted to her in July and in any case they should embody the ending of selection by 1980.

Reorganization plans for the

Edenbridge area of Kent have been accepted by the Secretary of State. She has also told the education authority that proposals for secondary schools are broadly acceptable and for the proposed sizes of the new and wilderness schools, the limited costs and proposed date of selection. The authority has been given a month to submit new proposals.

Three months have been given to submit new proposals for the Tonbridge and Tunbridge Wells areas. The Education Secretary told authority that the new selection system is considering phasing out courses relying exclusively on continuous assessment. A proposal to that effect is due to go before the examinations committee next week.

They are considering making a selection from 1980 some part of all GCSEs should be assessed on an end of term examination set by the school. Mr Household, the board's secretary, said that in the interests of the children taking these exams they had to see that they were of a

Staff denounce introduction of exam for CSE mode three

Battle to keep assessment-only courses

CSE boards are tightening up on the assessment of mode three, school-based assessments, but the attempts of one board to do this were attacked this week as a bureaucratic destruction of years of careful curriculum development.

The Bristol-based South Western CSE board is considering phasing out courses relying exclusively on continuous assessment. A proposal to that effect is due to go before the examinations committee next week.

Mr John Morris, Secretary of State for Wales, has approved the proposals for reorganization in Pontypool. Existing grammar and secondary modern schools will close and be replaced by two new comprehensive schools. Pupils over 16 will go to a tertiary college in the Midvale College of Further Education, Pontypool.

form respected by employers.

But several teachers in Swindon are complaining that the needs of the exam are being put before the educational needs of children. They claim they are not being consulted and that the CSE board is being run by head teachers out of touch with classroom realities.

Mr John Tobin, deputy head of Hreod Burna School in the town said: "The board do not understand that 100 per cent course work assessment is part of the course. It would be impossible to introduce an exam without entirely rethinking the philosophy of the course."

The courses involved are English language and literature courses cross-modulated on a consortium basis with several other local schools and an applied science and a biology course. One of them had taken 12 teachers seven years to organize.

Mr Tobin claimed the courses had earned considerable praise locally as well as national recognition. "We welcome outside checks but educational issues must come first. Exams must come second in education."

Neither he nor the 23 teachers in his school who were affected had been consulted. Neither had the local exam board advisory group. What was supposed to be a teacher controlled exam system was "a great bureaucratic machine" and he feared things would get worse when the exam boards came together to administer the new common 16-plus system.

Mr Household said the Swindon teachers were "jumping the gun". The proposal was just a point for discussion and they would be consulted in due course.

There was no need for schools to dismantle courses. What they

taught and how they did it would still be up to them.

The exam board was only interested in what sort of evidence was submitted of a child's performance. It was quite in order to expect part of that to be based on an end of term test.

Other CSE board secretaries confirmed that there is a general move to tighten up on mode three work. Greater control over the naming of courses is being introduced to avoid confusion among users, and greater stringency is being applied to moderation.

Some boards are looking to the government committee considering the amalgamation of CSE and O level to give more impetus to the closer control of school-based assessment. The Waddell Committee's report may be published within the next fortnight.

Bob Doe

Cluster plan reprieves rural classes

Norfolk County Council has approved a five-year experiment in combating the problem of rural small schools.

It plans to use one school in the course of two or three, retaining the other ones for the 4 to 8 age group and transferring children to the larger school for 8-11 age teaching. The first such "cluster" will be the schools of Great Ryburgh with 32 on roll, Stibbard with 47 and Guit with only 28, lying near Fakenham in north Norfolk. The move was forced on the Education Committee by the falling number of primary school aged children at Guit, the resignation of head teachers at two of the schools and the need to make effective use of existing resources.

Guit is likely to be closed if the experiment fails. It will be closely monitored by the County Council, HM Inspectorate and be followed by the DES as a test case for other parts of the country. Norfolk estimates that the cost will be about £54,000.

87% more opt for Welsh

The number of pupils attending designated bilingual schools in Wales had risen by 87 per cent since 1970, Mr Barry Jones, Under-Secretary of State for Wales, stated in the Commons this week. In January this year, the 60 schools in Wales that were officially designated as bilingual had 15,640 pupils.

These figures did not include schools in Welsh-speaking areas that were, to a greater or lesser extent, bilingual in character.

Mr Gerald Howells (Cardigan, Lab) said it would be a wonderful achievement if all Welsh children were able to have bilingual education by the end of this century. He asked about further plans to help these figures.

Mr Jones said it was their policy to encourage, i.e. to make bilingual provision which was in keeping with the linguistic characteristics of their areas. "We do not bully the local education authorities", he said.



Ups and downs: John McVicar, who is serving a 26-year prison sentence, is to be released on parole to study full-time at Leicester University. He has already gained a first degree in law, while still in prison, and will now be studying for a master's degree.

People

Schools

Mrs B. Shakespeare, deputy head

Blatow Lower School, Bedfordshire

is to be head of Cardington Lower

School.

Mr J. Skiles, permanent supply

teacher, Bedfordshire, is to be head of

Potton Lower School.

Mrs M. Tamm, head of Redwood

Lower School, Shropshire, Bedfordshire

is to be head of Apple Heath

Lower School.

Mr R. Houghton, head of Eikon

County Secondary School, Bury, is to

be head of Eikon High School.

Mr E. A. White, head of Ferrar

shorn County Secondary School,

Bedfordshire, is to be head of Ferrar

shorn High School.

Mr N. J. Brown, head of St Joseph's

RC Secondary School, Whitefield,

is to be head of St Joseph's RC High

School, Bury.

Cheaper maps demanded

The Ordnance Survey should give particularly favourable terms and free rights of reproduction to universities and schools, says the Geographical Association in evidence to the Ordnance Survey Review Committee. It should also consult education interests.

Ordnance Survey maps, it says, are essential for making children "graphicate, as well as literate, numerate and articulate". The present pricing policy discourages schools, colleges and educational publishers from using them.

The review committee was set up under Sir David Serpell early this year to look at ways of financing the Ordnance Survey, taking account of the views of users. This followed the outcry after 1973, when the Environment Secretary asked the Ordnance Survey to recover more of the costs of surveying and mapping from sales of the maps. Previously, maps had been priced to cover printing and distribution costs only.

Users were also upset by the changes in the maps when the survey altered its most widely used maps from the one inch scale to the metric 1:50,000. In the interests of keeping down costs, some detail was lost—for instance the distinction between mud and sand, and coniferous woodland was no longer made, and parish boundaries were omitted.

The Geographical Association, in its evidence, regrets these changes, which, it says, have reduced the value of the maps for teaching regional geography. But it is mainly

concerned with costs, if the cost of financing the survey through sales is pursued.

Schools, it says, should get maps at special prices (at present they are given a discount of 20 to 35 per cent on the retail price). They should also be allowed free reproduction for their internal use.

At the moment a blanket local authority licence costs £15 for each post-primary institution, and if the licence is not taken, every school must pay £30 a year.

A spokesman for the association said that, in the present financial situation, these charges were hard to meet. And the price of the maps has risen enormously—from £6 when the 1:50,000 scale was introduced in 1974, to £140.

The reproduction costs to publishers are also high, and the association claims that educational publishers are switching to maps of European countries, where governments "have a more generous approach". They are reducing the number and variety of maps and textbooks.

Recently the Ordnance Survey improved consultation procedures and an educational requirement working party of the Local Authorities Consultative Committee was set up. But the Geographical Association believes this is not enough. A special body that deals directly with the Ordnance Survey, and presents teachers and advisers with contemporary methods of using maps is needed.

FE jobs for 1,500 redundant?

Surplus teachers in Sheffield will be redeployed in the city's further education colleges if agreement is reached in discussions now taking place between the education authority, college principals and teacher associations.

The move is an attempt to cope with more than 1,500 teachers likely to become redundant in Sheffield within the next 10 years. At present the city employs about 5,000 teachers. Of these about 80 per cent are under 50, so natural retirement over the next few years will do little to alleviate the situation.

Meanwhile, post-16 education in various forms is certain to expand.

Mr John Mann, deputy chief education officer, said this week while some teachers might be paid to take up FE appointments, it was not a desirable period of retraining for the majority.

Teachers might be redeployed from their school post perhaps a term before they join the college.

Short "cater" courses may be put on for teachers who wish to explore the possibility of moving to further education, Mr Mann added.

Universities

Professor F. J. Moss, former head of the Institute of Urban and Regional Planning at the University of Ulster, is to be professor and head of the department of urban regional planning, University of Sheffield.

Mr N. Lewis, formerly senior lecturer in law at the University of Hull, is to be the chair of law, University of Sheffield.

Dr J. Craig, reader in department of physics, is to be a personal lecturer in the department of physics, University of Sheffield.

Dr F. M. Harrison, reader in chemistry, is to be a personal lecturer in the department of chemistry, University of Sheffield.

Mr A. C. Richardson, head of school, Abraham Moss Centre, Manchester, is to be head of Phillips High School.

Miss B. E. Black, head of Hope Park Girls' County Secondary School, Prescot, is to be head of Prescot High School, Bury.

Mr N. R. Pakes, head of Radcliffe County Secondary School, is to be head of Radcliffe High School, Bury.

Mr J. G. Banks, head of St Gabriel's RC Secondary School, Bury, is to be head of St Gabriel's RC High School.

Mr N. J. Brown, head of St Joseph's RC Secondary School, Whitefield, is to be head of St Joseph's RC High School, Bury.

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School to work

Tories consider pruning courses to build centres of excellence

by Mark Jackson

Many universities could be forced to close their engineering departments under a plan now being considered by the Shadow Cabinet. The plan would restrict professional engineering education to specially designated universities and polytechnics.

The proposals were made public this week in the report of a Conservative working party which recommends a five-year training followed by two years of probationary experience for chartered engineers.

Not to be published, however, is another report to the Shadow Cabinet, by a parallel policy study group, which contains a more broadly controversial proposal that an "industrial group" should be set up within the University Grants Committee to influence its policies and make them more acceptable to industry.

The study group, headed by Mr Nigel Forman, MP, wants similar units set up within each university administration to safeguard industry's interests.

Sir Keith Joseph, the Tory policy and research overlord, attended the press conference on Monday to announce the recommendations on engineering education. The working party which produced them, set up by Dr Keith Hampson, vice-chairman of the Conservative Parliamentary Education Committee, was headed by Professor John Thornton, and made up largely of other Tory engineering professors, industrialists, and leading members of the professional engineering institutions.

Their report recommends a two-tier structure for the engineering profession, with the institutions tak-

ing the main responsibility for controlling the training of chartered engineers and leaving the industry's training board to look after the training of technicians.

It proposes, however, that ambitious technicians should be encouraged and helped with grants to aged and in the end for chartered status so as to maintain the traditional shop floor route to the top.

The group wants the professional bodies to "rigorously monitor" training, and to recognize only engineering departments which are willing and able to set up to their satisfaction an integrated programme for the whole five years of training, including post-graduate practical work.

The report also calls for:

● Tax relief for employers who provide post-experience and updating courses or retaining for engineers a major departure from the way training costs in general are funded.

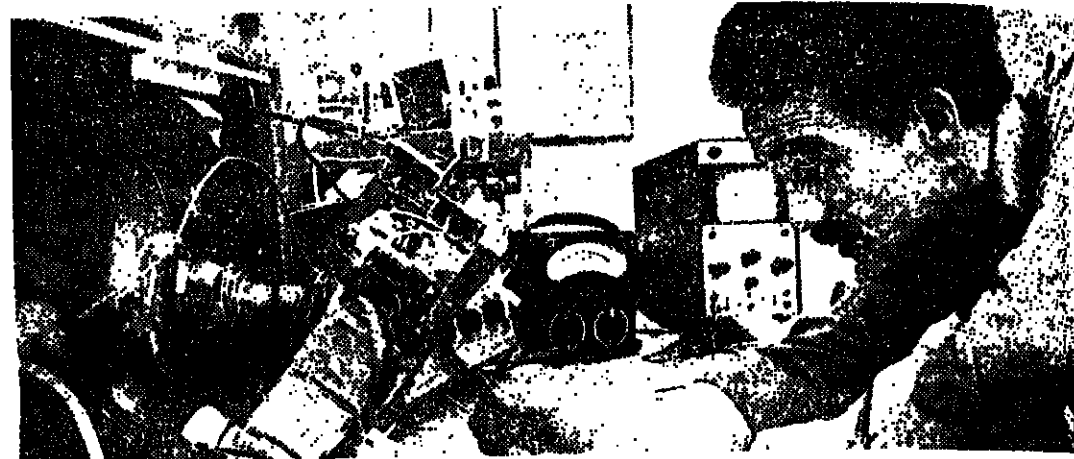
● A legal right to day or block release for all trainees up to 18 who want further education.

● The proposed Jubilee scholarships to be expanded into a scheme of competitive state bursaries not subject to means test.

● A minister of Cabinet rank—not a junior minister within the DES, as proposed by the Commons Select Committee—to take responsibility for engineering supply.

● Universities and polytechnics to become heads of the school and industry union, running in-service courses for teachers and helping them to develop suitable curricula.

Unemployment, however, is seen as the main reason why the engineering profession, with the institutions tak-



The so-called "Dainton" students will get an extra £500 grant—a waste of money, say critics.

Advance, engineering elite

The first batch of Government-backed 'super engineers' take up their select places in universities next term. Bert Lodge looks at their prospects for success

A tax-free £500 in the back pocket—on top of any other grant and with nothing docked for having rich parents—will accompany 100 of the most 13,000 students who go up to start engineering degree courses this autumn.

But the courses the hand-picked 100 will follow are exceptional. They are the new four-year "enriched" courses, providing only 320 places. These universities have been selected to mount from October. And for the 100 creme de la creme the £500 will be payable for each of the four years.

Well endowed scholarships, exclusive courses for high-flyers... the whole package is the Government's effort to attract quality into British engineering. As Professor Alan Swenson, Dean of Engineering at Imperial College London, puts it: "We have never been short of applicants—only of good applicants."

The campaign to upgrade a discipline which earns Britain a substantial slice of its foreign exchange is not confined to cash in hand and selective courses. New degrees, such as the B.Eng. at Imperial College, are being created to open up the anonymity of the B.Sc. which has hitherto cloaked most engineering degrees. From another of the universities, Brunel, students will graduate with a B.Sc. and an M.Eng.

The universities whose submissions to put on the courses have been accepted are: Birmingham, Brunel, Cambridge, Imperial College, Manchester, UCL, UMIST, Oxford, Queen's (Belfast) and Strathclyde. The courses will be known as "Dainton" courses after Sir Fred Dainton, chairman of the University Grants Committee. A further five will be put on in polytechnics, starting from 1979.

Though all the scholarships will go to "Dainton" students this year, it will not be automatic in future when the initial 100 will be added to a more modest number of places. Any student on a full-time or sandwich course leading to an engineering degree at a university or polytechnic in the United Kingdom will be eligible.

Putting all this year's batch of scholarships in one elite basket attracted criticism from politicians and academics. Most withering were the comments of Dr Keith Hampson, MP, Conservative Party spokesman on higher education, though his "industrial group" was not where the scholarships went but the timing of their award.

"Choked" he called to on May 24 in a letter to Mr Gordon Brown, Junior Minister for Higher Education. "You are simply throwing money away," he wrote. "Since the point of such a scholarship scheme was to change the climate in

the schools so as to draw the ablest students into choosing crucial areas of engineering... where is the point in paying these large extra grants to pupils who had already made up their minds last autumn to apply for engineering courses at one university or another?"

Dr Hampson also touched on another point. Existing sandwich courses might find their recruitment suffers from the competition of these new elite four year courses. This criticism was expanded by Professor Carl Hanson, pro vice-chancellor of Bradford University, in a letter on June 8 to the Financial Times.

The University Grants Committee had invited institutions to submit proposals for the new courses which would include some experience in industry, he pointed out. "This invitation placed some universities in an embarrassing position by apparently ignoring the four-year integrated sandwich courses in engineering which had been in operation for many years."

When the list of institutions chosen was announced only one university with experience of operating integrated sandwich courses was included.

"The decision was a matter of some concern since there is an implication that engineering courses not designated as 'special' are of lower calibre," wrote Professor Hanson. This impression has now been reinforced by giving all the new scholarships to the new special courses.

Why were they? The question swirled the spotlight round to the actual awarding body, which has the uncomfortable obligation of the National Engineering Scholarships Action Committee.

The chairman, Mr Oscar Hahn, is an unassuming director of GEC, Keen and Nettletons he left Cambridge with an engineering degree in the 1940s, then served his time as a turner with Babcock and Wilcox on the Clyde. He got a CBE in 1971 for his work in race relations.

The pragmatic attitude of the industrialist came out in his letter of reply to Professor Hanson in The Financial Times on June 13. The committee, he said, did not exist before mid-March—too late to set the scheme up with its nationwide selection in time for the 1978 entry. "We had the alternative of doing nothing in 1978 or taking a short cut. On balance I think it was right to take a short cut."

He also assured Professor Hanson that he personally was a strong believer in sandwich courses and hinted (though "I cannot anticipate decisions of the action committee") that existing courses could well expect to find themselves blessed with national scholarship holders in future.

Last week Mr Hahn talked about what the committee would be looking for and how they planned to find it. "All round evidence of character," somebody who can tackle not only the technical side but the human aspect as well... able to take people along with them. "I don't want all A grades at G.C.E. A level. But they must be academically respectable and able to communicate. I'm talking about the sort of people who might usually go and work for Oxford or in the City or become doctors or barristers."

"And we've got to have a commitment-like idea in industry in the holidays interest in things mechanical."

"I'd like to see a prototype. Something written, say, by words, done when they're at university."

The campaign will get under way in October. Mr Hahn does not conceal his belief that his rate target will be achieved. When all the applications have been sifted Mr Hahn sees the selection being made by a committee of six people. "I'll be one of the first year," he says, "at the University of Chester, London, Cardiff and Birmingham."

When the list of selected universities is published, it will be a surprise. Mr Hahn says that he will be looking for a mix of institutions, including a few of the new four-year integrated sandwich courses in engineering which had been in operation for many years.

Because its existing courses already four years Strathclyde is tending its special course to include a "sandwich" element, including a "sandwich" element in industry, which is a new twist to the traditional sandwich course.

At Imperial College, which is visiting 80 of the 320 places, the mechanical and engineering courses must be approved by firms and though not demanded for the engineering course, it will be a requirement for the sandwich element.

Imperial also requires special approval for the sandwich element. In the Birmingham option in the Birmingham option, which Mr Hahn would prefer, the sandwich element is a requirement for the engineering course, it will be a requirement for the sandwich element.

All the courses intended to be sandwich courses, he said, have some element of management, economics, business studies, and social studies. Though the industrial relations—though Professor Swenson is realistic enough to emphasize that "we can't do more than a 'sandwich' element in the management studies industry."

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Moves to ban aerosols and fears about carbon-dioxide build-up are based on perilously thin evidence

Hot air from aerosols



The aerosol may be innocent after all—a more intriguing, and connected, argument is that methane gas is associated with earthquakes.

The argument about the dangers of aerosols continues—and becomes ever more intricate. The central issue is whether our practice of burning fossil fuels of various kinds will yield such a high concentration of carbon dioxide that greater proportions of the energy from the sun will be trapped in the lower atmosphere. The simplest calculations, so simple that they are best called simple-minded, are based on the undisputed fact that carbon dioxide absorbs infrared radiation and thus inhibits the radiation of energy from the surface of the earth and the lower layers of the atmosphere back into interplanetary space.

The predictions of this simple calculation are stark: if the present rate of fossil fuel combustion continues, the concentration of carbon dioxide will have virtually doubled in a 100 years by the middle of the next century, and the temperature at the surface of the earth will have increased by as much as 10°C. The degree of centrifuge—quite enough to cause substantial climatic changes.

Some of the objections to this simple argument have already been aired in this column. Carbon dioxide is continually being removed by solution in the oceans, but nobody knows how the rate of this removal is affected by, for example, changes in ocean currents. Then it has become clear that fossil fuel is not the only significant source of carbon dioxide—deforestation or changes in agricultural practice, have in the past been as important.

Quite what all this means for the dire predictions of climatic catastrophe remains to be seen. One thing, however, is clear—if carbon dioxide goes on increasing in concentration, there is less need to worry about the effects of aerosols and nitrous oxide on the ozone concentration of the stratosphere. Indeed, the new predictions and those of the solemn committees which have deliberated on the problems of aerosol propellants just about cancel out.

On the face of things, the greenhouse effect remains—but even the authors of the latest calculations would probably agree that there is a long way to go before all the details of this intricate tale have been included in the calculations. The importance of carbon dioxide as a way of getting rid of heat from the upper atmosphere is a reminder that a proper calculation of the greenhouse effect will require a knowledge of the rate of mixing in the atmosphere, which in time will depend on knowing in some detail how weather patterns would be changed by the greenhouse effect. But the biggest defect of the existing calculations is that none of them credits the earth's atmosphere with being a three-dimensional structure. Instead, the earth's atmosphere is dealt with as if it were a simple column of air, its properties changing with height but no allowance made for differences between different latitudes.

When the acknowledged defects of the calculations are as great as this, the question properly arises whether scientists act responsibly by recommending public policies based on what are flimsy arguments. For if Groves and his colleagues are right, the whole argument in the past five years which has led to the restriction of the uses made of aerosols is entirely beside the point. Many governments may now be entitled to feel that they have been led on an expensive wild-goose chase—and they will not be more kindly disposed towards science as a result.

But, the false prophets of doom from aerosols will answer, "Even if there only might have been a threat of ozone depletion, was it not our public duty to warn people of it? And were we not justified in oversteering our cars given the reluctance of governments to change their ways?"

Alas, neither argument will wash. If there were a hazard from either carbon dioxide or aerosols, it could not be significant for half a century or so. To say this does not imply that nothing need be done for another 50 years, but merely that the pace of research in this field is now so great that an accurate appraisal of the dangers (such as they be) and potential remedies for them will be available long before real trouble could be around the corner.

What the circumstances therefore require is a certain calmness of spirit—a capacity to acknowledge that some things are unavoidably uncertain, at least for the time being. Most previous generations have been good at this trick: why should the present be so clamant in its demand for certainty?

After all, the uncertainties of the greenhouse effect are in some ways quite small. In the past few weeks, Professor Thomas Gold of Cornell University has been telling any body who will listen about a new theory that is meant to explain several puzzling things about the earth. When the solar nebula condensed to form the planets, Gold says, it contained a great deal of methane gas, some of which was incorporated in the earth. And, since the beginning of geological time—as now—methane has been leaking out from the surface. According to Gold, subterranean methane makes deep earthquakes possible by lubricating fractures in rocks under such high pressure that in the absence of gas the rocks would be permanently welded together. Its escape from the surface explains why dogs bark in advance of shallow earthquakes—and if the theory is right—the primordial methane in this subterranean gas is also the origin of most of the carbon on the surface of the earth—the carbonate rocks, the carbon in most fossil fuels (coal, for example) as well as in organic matter still alive and also the carbon dioxide in the atmosphere.

Originally, soon after the earth was formed, the methane stayed mostly as methane in the atmosphere until it was decomposed by sunlight and the presence of water vapour and its decomposition products, converted to carbon dioxide and also (significantly) building blocks (such as formaldehyde) for simple organic molecules. Nowadays, according to Gold, methane still reaches the surface of the earth but because the atmosphere is rich in oxygen is quickly turned into carbon dioxide. On a geological time-scale, most of that is converted into carbonate rocks.

So far, so good. The startling predictions of Gold's theory concern the origin of natural gas deposits and the mechanism of earthquakes. But outgassing of methane from the surface of the earth also helps to explain how the carbon dioxide in the atmosphere is replenished on a time-scale much longer than the burning of fossil fuel. Accordingly, the amount of oxygen in the atmosphere is somehow linked to the rate at which methane is escaping (the more methane, the less oxygen), the rate at which water vapour is decomposed in the atmosphere and the rate at which hydrogen afterwards escapes and the rate at which carbon dioxide is dissolved in the oceans.

Gold suggests that there may in the past have been variations of oxygen concentration great enough to account for the mass extinction of species of living things. He might just be right. There is no question that fluctuations of oxygen concentration would do much more damaging than fluctuations of carbon dioxide concentration and there are just as many ways in which they could occur. My advice, therefore, to a young person wishing to make a dubious reputation for himself as a seer of disaster would be to predict doom through the little (or too much) oxygen. Scientifically, it is an equally open bet.

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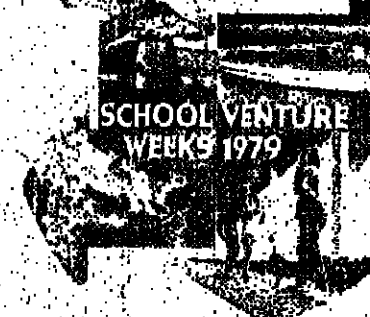
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The answers to John Rae's quiz (page 4)

1. Adolf Hitler
2. Charlotte, Brown (Glegh)
3. Bridgette School, Cowan
4. Napoleon Bonaparte
5. Pascal
6. Gibbon
7. Cardinal Richelieu
8. Disraeli
9. Graham Greene
10. Stanley Baldwin

Andrews

Race decision leaves questions unanswered

The University of California must admit Allan Bakke, the white engineer, whom the Davis Medical School twice rejected while accepting 16 less qualified black, Asian and Hispanic applicants. But the university may continue to use race as an admissions criterion.

That is the essence of a complex and fragmented Supreme Court decision in a case that was widely expected to produce a landmark judgment comparable to the 1954 Brown ruling, which led to the desegregation of American schools. Bakke was the first test in the United States' highest court of the legality and constitutionality of "affirmative action" in education and employment to racial minorities or women, in order to make up for past discrimination.

The nine justices of the Supreme Court produced six separate opinions on Bakke, none of them endorsed by a majority of the court. The overall effect was a compromise that gave some satisfaction to all involved in this highly emotive case, but those who hoped for clear guidance on the acceptable limits of affirmative action were disappointed.

The Special Admissions Programme at Davis, which allocates a rigid quota of 16 places per year to minority applicants, was struck down by the court, though only by a 5-4 minority. So Allan Bakke can fulfil his dream of becoming a medical student in September—at the age of 38.

Four of the five pro-Bakke justices, including Chief Justice Warren Burger, decided Davis clearly contravened Title VI of the 1964 Civil Rights Act, which forbids racial discrimination by

"The court today affirms the constitutional power of federal and state governments to act affirmatively to achieve equal opportunity for all. . . . The Government may take race into account when it acts not to demean or insult any racial group but to remedy disadvantages cast on minorities by past racial discrimination."

Institutions receiving federal funding.

Therefore, they said, there was no need to raise the "deeper question of whether race can ever be a factor in admissions policy, or to consider whether the Davis procedure violated the 'equal protection clause' of the United States Constitution (whose wording is much less precise than the 1964 Act)."

The fifth member of the pro-

Clive Cookson reports from Washington on a Supreme Court ruling on the legality of 'affirmative action'—giving preferential treatment to minorities.

Bakke group, Lewis Powell, thought Davis had violated the constitution by creating a closed category from which Allan Bakke was excluded solely because of his race.

But Justice Powell also said more flexible admissions procedures that take race into account as one of a number of factors, with the intention of obtaining a diverse student body, were constitutional.

He cited Harvard University's admissions policy as a good example of an acceptable method of increasing black student numbers.

The four remaining justices, including Thurgood Marshall, the Supreme Court's first and only black member, said Bakke should

"The position of the Negro today in America is the tragic but inevitable consequence of centuries of unequal treatment. Measured by any benchmark of comfort or achievement, meaningful equality remains a distant dream for the Negro."—Justice Thurgood Marshall, the only black member of the Supreme Court.

not be admitted to Davis, because the medical school used race in a constitutional manner to overcome "substantial, chronic minority under-representation in the medical profession."

There is, of course, a continuous spectrum between the rigid racial quotas narrowly ruled out by the court and the use of race as a marginal criterion to decide between otherwise equal candidates. The Supreme Court left the line to be drawn in future reverse discrimination lawsuits—of which there are certain to be many.

If Bakke is a poor guide to the limits of affirmative action in education, it gives even less guidance to employers with affirmative action programmes.

The case also raises questions about the Kaiser Aluminum and Chemical Company, which agreed to train one woman or member of a minority race for every white man trained for a craft job (with a goal of 30 per cent minority employment at the firm's Louisiana plant). Two lower federal courts have ruled the programme illegal.

Another crucial case involves ATT, the telecommunications giant that runs the United States telephone system. A union, the Communications Workers of America, is challenging the company's allocation of jobs to minorities.

of two-thirds of new jobs and promotions to racial minorities and women, on the grounds that it violates seniority rights in employee's contracts.

The federal government persuaded ATT to institute its affirmative action programme to make up for the company's alleged sex and race discrimination in the past.

Public reactions to the Bakke decision have depended as much as anything on whether the speaker is an optimist or a pessimist. Generally, however, black and civil rights leaders and the American educational community have expressed relief that the Supreme Court did not circumscribe affirmative action more severely or even rule it completely unconstitutional.

Many felt privately that Davis was, from their point of view, an unfavourable test case for reverse discrimination because its Special Admissions Programme could so easily be called a rigid racial quota, and because the medical school was almost new and so could have no past history of discrimination.

Higher education associations say an overwhelming majority of affirmative action programmes in American colleges and universities can continue, as they do not have numerical quotas or inflexible goals for minority enrolment.

Universities that have adopted percentage targets now emphasize their flexibility so as to be on the safe side—the Bakke decision leaves unclear the legality of programmes that aim to admit or recruit a certain specified percentage of blacks or women but do not reserve a fixed number of places for them.

But a small number of professional schools with admissions systems similar to Davis have indicated they will be rethinking their approaches. They include Rutgers University's Newark Law School, whose goal is to admit

ment Opportunity Commission, Eleanor Morton, said the Bakke case has not left me with any duty to interrupt the BEXX suits or do anything different or to recommend a change of policy to the commission.

Justice Powell's key Bakke

Australia

Doubts on future of Schools Commission

from John Kirkaldy

THE future of the Schools Commission is looking more insecure as a result of the meeting of the Federal Government and the states' premiers in Canberra.

The full-scale review of the Federal Government's involvement in education is to be undertaken by federal and state education Ministers who will report back to their governments by August.

The investigation will look into ways to make the federal government's role in education more effective. It is seen as a victory for the Premier of Western Australia, Sir Charles Court, who pressed strongly on this issue at the meeting.

The commission was established in 1973 by the Labour Government of Mr Gough Whitlam and was often referred to by him as "one of the greatest achievements" of his administration.

Mr Whitlam's objectives were to "bring the federal government's role in education to the attention of the states and to discuss the future of federal involvement in education."

Many members of the present Liberal National Country Party Coalition of Mr Malcolm Fraser, who replaced Whitlam, are lukewarm towards the commission. They see it as a pressure group for increased federal spending at a time of financial austerity.

Since the present government came to power in December 1975, there has been a shift in the balance between the states and the federal government. The commission, headed by Dr Ken McKinnon, has been largely ignored by the federal government.

The federal education budget, which was 20 per cent of total spending on education and the remainder comes from the states, is under threat of a general cut.

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Sweden

Minority calls for more power

from Colin Narbrough

Sweden's Lapps are demanding greater control over decisions affecting their 15,000-strong minority community, especially the field of education.

At their thirty-fourth annual congress in this small northern town, Sweden called the objective of federal funding for education should be to see how it could "ensure" minimum interference with state administration.

It seems likely that the states will divide equally on the issue. The Lapps state (New South Wales, South Australia and Tasmania) supporting the commission but that the tie will be broken by the Federal Government who may well support Sir Charles. The Federal Minister for Education, Senator John Carrick, is also responsible for the government's "new federalism" policy and is keen to implement its declared objective of devolution.

No firm decision was taken on the commission at the premier's conference but it will be a major item on the agenda when the Education Ministers meet to discuss this finding. The commission seems much more vulnerable to these kinds of pressure than the tertiary Education Commission (TEC)—as schools are financed on a joint federal-state basis, whereas the TEC is entirely funded by the federal government.

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Republic of Ireland

Arts graduates hit jobs snag

from John Walshe

DUBLIN

Arts graduates who took the one-year Higher Diploma in Education in order to qualify as secondary school teachers have not been doing too well in the teaching job stakes, the annual report of the Association of Irish University Careers and Appointment Services has shown.

The diploma is essential to teach in the private secondary schools, which cater for two-thirds of the post-primary population in the Republic. For the past few years the course has been over-subscribed by arts graduates, some of whom have taken the diploma as a hedge against unemployment.

The latest report says that in each of the past three years, less than half of the arts graduates completing the course have been successful in finding permanent teaching posts in Ireland. Even allowing for those who involved themselves in further study, deliberately chose an alternative career or chose to teach abroad, the situation must give rise to concern, it says.

Last year, 1,559 graduates suc-

cessfully completed the diploma course. For their survey, the careers officers from the country's five university colleges were able to track down the career patterns of 1,320, a response rate of 84.7 per cent. The report says that although the figure of 89 unemployed (6.7 per cent of those surveyed) may appear relatively low, there were at least as many again who entered other work and further training because they could not obtain posts in secondary level schools. Of the 125 (9.5 per cent) who entered further studies, the highest single group went on for special training for the primary sector where there is still a shortage of teachers.

A further 201 (15.2 per cent) were in part-time or temporary posts, 74 (5.6 per cent) had gone teaching abroad, 123 (9.3 per cent) had taken up other work, while the actual number who obtained permanent teaching posts in Ireland was 694, or 52.6 per cent of the total surveyed.

The report says that unless there is a further improvement in the numbers of arts graduates taking the higher diploma course, the situation must give rise to concern, it says.

Of those with higher degrees who responded, 10.1 per cent went on for research work or further academic study, 1.2 per cent for teacher training, 2 per cent for other vocational or professional training, 0.6 per cent were not available for employment at the end of January this year, and 40.8 per cent gained employment.

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France

Two in three expected to pass baccalaureat exam

from our correspondent

PARIS About 60 per cent of the 300,000 young French people sitting this year's baccalaureat examinations are expected to pass, according to a recent study.

Fifty per cent of them will go to university and ten per cent will prepare for competitive entrance exams for the *Grandes Ecoles*.

The study, which is aimed at the candidates, explodes a number of prevalent myths. For example, medicine is not the hardest of university subjects—up to 50 per cent of students pass the first year competitive examinations. It compares favourably with law in which only around 25 per cent are selected for second year studies leading to the *Diplôme d'Etudes Universitaires Générales* (DEUG).

The *Le Monde de l'Éducation*, which carried out the study, also analyses the advantages of the different baccalaureat options.

The C option, natural science and maths, gives overall the best chances in university and professional life. Law is one of the few subjects in which the choice of baccalaureat option counts for little—over 60 per cent of law students have the

A option (literature) baccalaureat. As regards the sciences, *Le Monde* notes that less than 30 per cent of students pass the maths and physics DEUG compared with 80 per cent in natural science, a subject in which French universities are limiting admissions.

Physics and chemistry offer far more job opportunities than natural science and the heat sectors of all are computer programming and electronics.

In economic sciences, working-class students were found to do less well than their middle-class colleagues and, according to *Le Monde*, medicine and law are practically middle-class strongholds.

Job opportunities with law are much better. Apart from the specialist careers of lawyer or barrister, law graduates in France stand a better chance of succeeding in civil service careers than economics graduates.

Literary subjects present the worst career prospects. Although they are easier than other disciplines—over half the students pass the first year examinations straight away. Good baccalaureat results help considerably.

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Sport
World
beater
takes on
the boys

by Stanley Levenson

Stephen Cram, the 17-year-old
schoolboy who was selected for the
Commonwealth Games after rocketing
into the records lists at Crystal
Palace, London, on Sunday, will be
racing in the English schools
championships at Chertfield this
weekend.Cram, winner of the intermediate
1,500 metres last year, will be luck-
y, the senior race this time with
all the talent of a world age group
record behind him.At Crystal Palace he became the
fastest 17-year-old miler in history
with a time of 3 mins 57.4 secs
which is 1.6 secs faster than the
previous record set by Jim Ryan
(United States) when Cram was
only 16.Cram, of Springfield Comprehensive
School, Jarrold, had already
given a sign of things to come at
the recent Durham schools cham-
pionships when he clocked 3 mins
42.7 secs over 1,500 metres, nearly
10 seconds faster than his fastest
last year.Another three of the England team
for next month's Commonwealth
Games in Edmonton, Alberta—all
reigning schools champions—will
also be competing at Chertfield.
Kathy Smallwood of Reading
again runs in the senior 200 metres
which she won in a championship
record of 23.1 sec last year; Colin
Sawed (Coventry) is again in the
senior 800 metres and intermediate

Stephen Cram: fastest miler.

long jumper Sue Hearnshaw (Hull)
this time competes in the senior age
group.With hundreds of others taking
part in this massive athletics enter-
prise there are sure to be some
outstanding performances which
will bring a new wave to the
fore-sprinter Mike McFarlane
(London), hurdlers Mark Holton
(Stoke) and Gary Oakes (London)
and javelin thrower Farina Whit-
bread (Thurrock) are among last
year's schools champions who arebound for Edmonton.
The championships, sponsored by
Esso, are being held at Chertfield
School where work on the new all-
weather synthetic track has only
just been completed in time. Late
spring snows delayed operations
but Derbyshire County Council,
using their own staff instead of
outside contractors, laid the sur-
face in time.The Sports Council gave the
£7,000 needed for the track itself
and the runways for the jumps.What to do
when
they leave?

by Bert Lodge

The Sports Council is mounting
an 18-month project to try and
the fall-off in sporting activity
among young people when they
leave school.The two areas for the experi-
ment are Streatham, in the
Borough of Lambeth, and
chosen for the limited opportu-
nity available there for
people.Joint committees of edu-
cational and Sports Council
officials in both areas are
up schemes which will include
days in sports clubs for school
leavers, formation of "clubs"
with reduced subscriptions and
appointment of schools liaison
co-ordinators in each club.Mr David Bridges, Sports
Council project officer, said this
week ago as 1960 the Welfare
Committee on Sport and the
community identified the fall-off
participation by young people
they left school as an area of
concern."For a young person access
to being surrounded at school
facilities, coaching and equip-
ment can be a problem when he
leaves to know where to go. If
problem is not solved fairly quickly
they begin to drift away from the
sport."Drownings up
as cuts biteRecent cuts of up to 75 per cent
in swimming lessons could lead to
a disastrous increase in the number
of children drowning, says a report
by the Royal Society for the Pre-
vention of Accidents published last
week. Between 1974 and 1975, 200
cuts began to have an effect, 200
drownings increased by 10 per cent.The report is based on a survey
of 100 schools in the first 10
months of this year. They showed
52 children under 15 who drowned
and 55 who nearly drowned.Most of the children who drowned
were under 10, and half of the
were under school age. Most had
accidents while swimming pools. A
large number died in rivers or
lakes. Only one child died in the sea.In a survey last year, 46 of 95
schools found that 46 of 95
education authorities were cutting
swimming lessons for 1977-78. Estimated
cuts range from £2,000 a year in
Wiltshire to £400,000 in
Dorset. A cloud of doom
hovers over the future of
swimming lessons.The Royal Society for the Pre-
vention of Accidents, Cannon House,
The Priory, Queensway, Birmingham
B4 6BS; £1.Canoeists after
36 titlesScores of young canoeists
Friday converging on the
point, Nottingham, for the
annual schools championships
alongside the senior championships
this weekend.Boys and girls will compete in
36 titles in singles, pairs and four
over distances ranging from
metres to 3,000 metres.
The events will be held at
the Nottingham City Canal
club.

Gymnastics finals

Twenty girls aged between 10
and 15 will compete in the
regional final of the British
national gymnastics league
for girls at Croydon SBA
Brookley.Each will be able to perform
one of her choice. The four
winners will represent
London in September
Wembley Arena in the
British Amateur Gymnastics
Association's national final.

Near-thing win for Scots

Scotland beat England 10-8 in the
schools golf international staged at
the Crowborough Beacon Golf
Club, East Sussex, on Sunday.
But it was a near-thing.
The English, trailing 5-1
after the morning foursomes, hit
back to get the better of the sin-
gles, 7-5, but it wasn't enough.Malcolm McKenzie, who won the
English championship a week ear-
lier, had a bad time in the morning
with some erratic driving. But in
the afternoon he looked to be
getting the better of Scottish cap-
tain Ross Fraser. However, two up
and two to go, McKenzie relaxed
his grip and Fraser halved the
match.The only boy to win both his
matches was Scotland's Eddie
Milne. The biggest wins were Scot-
land's Willie Walker who defeated
Neil Hall 7-6, and by Eng-
land's Paul Hardwick, who beat
Alan Currie 6-5.Results (Scottish names first):
Foursomes: Ross Fraser
(Glasgow Academy, Glasgow) and
Gordon Miller (Clydebank High
School, Glasgow) beat Malcolm McKenzie
(High School, Sheffield) and Paul
Hardwick (Brook School, Sheffield).
Singles: 5 and 4 Alan Currie
(Greenwood Academy, Irvine) and
Eddie Milne (Buckie High School)
beat John Plaxton (Selby Grammar
School, Selby) and Jeremy Shepherd
(Wolfraton School, Hull) two
holes. Billy Jack (Ardrossan
Academy) and Stewart Allan
(Marr College, Troon) beat John
Dixon and Keith Armstrong (both
Aberdeen High School) 4 and 3.
Duncan Bell (Belfast High School,
Kirkcubbin) and Graham
Atkins (Lancaster Grammar School)
beat John Hall (St Mary's School,
Barnham) and David Harkins (Hartfield
School, Gateshead) 6 and 4. Graham Pook
(Hartfield School, Gateshead) 6 and 4. Graham PookWinners' captain: Ross Fraser, of
Bearsden Academy.

Junior All Blacks

Through the adult All Blacks mark
the 15th anniversary of the
national rugby with their British
tour, this year no representative
(New Zealand) secondary schools
rugby team has been fielded to
date.The gap will be filled in Sep-
tember at the climax of the tour
when the Australian
schools team. After meeting south
island, central and northern regional
teams, the schoolboys will be
meeting New Zealand schools on the
country's most famous ground,
Eden Park, Auckland.Mr John McDougall, head of
Wesley College, Papanui, and chair-
man of the recently established
New Zealand Secondary Schools
Rugby Council, is confident that
more international schoolboy rugby
tours will follow.

Cycling stars join battle

Three outstanding young racing
cyclists will clash during the
English Schools Cycling Assem-
bly, which will be held at
Barnham, Suffolk, on Sunday.
The assembly will be held at
Barnham, Suffolk, on Sunday.The assembly will be held at
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Barnham, Suffolk, on Sunday.

Multitude of sin bins

Ann Berger and Gordon Mitchell take a critical look at a growing phenomenon: special units in secondary schools

The increased incidence of "disruptive-
ness" is a phenomenon usually linked to
RSLA, the advent of comprehensive
schooling, or both. How can we effectively
educate and socialize those who cannot
or will not accept, with good grace, the
traditional tasks of schools?Two approaches have been tried.
According to conventional practice, chil-
dren manifestly "different" are isolated
from their "normal" peers. However,
special schools for the maladjusted are
seemingly unable to cope with the
increased demands for their services.Further, increasing the number of spe-
cial schools would require massive spend-
ing on premises and staff. The total isola-
tion of disruptives might also seem to lay
heavier emphasis on custodial rather than
educative processes—institutionalizing
and hence reinforcing their "different-
ness".The other, more unorthodox, approach
—the alternative or free school move-
ment, loosely based on the libertarian
ideals of A. S. Neill at Summerhill—
posed too many disconcerting problems
for educational administration to swallow,
particularly in relation to accountability
and control. Such schools are always
likely to succumb to financial malnutri-
tion.Since these difficult children will not
go away, the comprehensives themselves,
with becoming modesty and true to the
British genius for compromise, have
worked out another solution by establish-
ing campus-based special units of their
own. Some are starkly and openly
declared as withdrawal or exclusion units,
others are shrouded by acronyms like
SUMP or STAR group—respectively
representing, one might speculate, "social
unit for maladjusted personnel" and
"social learning and rehabilitation pro-
cess".Precise figures are hard to come by,
but the Centre for Information and
Advice on Educational Disadvantage had
this to say last April "... of the 200 spe-
cial units set up by L.E.A.s in England and
Wales, the great majority are designed to
cater for the disruptive or expelled/
suspended pupil". Whether or not this
figure is a conservative estimate, it does
seem to indicate that the ideal of the com-
prehensive school is still a long way from
fruition. It seems that as streaming by
ability is declining, it is being replaced
by another form of stratification—differ-
entiation by behaviour.Though the L.E.A.s have financed units
for disruptive, it was undertaken in re-
sponse to the teachers' demands. Of all
the problems facing teachers the presence
of "disruptive" pupils in class is by com-
mon consent the biggest. Their contin-
uous belligerence engenders fear,
hatred, frustration and impotence; almost
inevitably, the outcome is emotionally
charged confrontation.To all this, the teachers' arguments are
couched in rational terms. The education
of the many cannot be sacrificed to the
demands of the few: to protect the rights
of the many, the few must be educated
elsewhere; by making of this separate and
special provision, the disruptive pupils
will be able to undergo an educational
programme appropriate to their needs.For teachers who still have some mis-
givings, their professional conscience is
eased by the large numbers of safeguards
employed, especially over admission.It might be thought that of all educa-
tional categories the disruptive is one of
the most clearly identifiable. Batteries of
tests are rigidly required. However,
admission is still a lengthy process. When
the school's social sanctions and patience
are exhausted, then the complex process
of scrutiny begins: reports from the
house head and counsellor; reports on
family background; reports on the dis-
ruptive's mental state; previous school
reports.The off-campus activities must be
viewed as an integral part of the pupils'

Illustration by Tony McVeeney

It is this identikit profile which forms
the basis of the authority's decision: "X
is a suitable case for treatment". Finally,
great pains are taken to ensure that the
"patient" knows that success depends on
his willing cooperation and is the sine
qua non of his future well-being.Given such a scrupulous selection
procedure, we believe that the first priority
is to provide for the emotional and social
development of the individual. A pro-
gramme which is both educationally valid
and saleable to disruptives would
embody: a stable and sympathetic
environment within which pupils can
recognize and work through their diffi-
culties; a work programme in and out of
school relevant to the needs and interests
of the individual pupils; opportunities
for some kind of contact with their peers
who are not segregated—that is, contact
with the main school; a group of adults
(or one "significant" adult) with whom
the pupil(s) can establish long-term re-
lationships.The programme's objectives are to be
achieved in three settings: in the unit's
group base, in the limited access to the
main site facilities, and off-campus.It is mainly in the unit base that re-
medial work in the basic subjects will
be carried out, for it is likely—though not
necessarily so—that the typical disruptive
is an academic under-achiever. How-
ever, the extra significance of this re-
medial work is to be found in the way that
pupils learn to cope with the frustration
and difficulties of the work; how they
seek help and attention; and how they
relate to peers and adults.Since it is unlikely that specialist sub-
jects can be catered for in the unit, access
to them must be through the main school
timetable. The teaching of science, arts,
sports and crafts can most appropriately
be undertaken in specific physical con-
texts. The use of these facilities within
the main school also serve to minimize
the potential claustrophobia of unit life.The off-campus activities must be
viewed as an integral part of the pupils'educational programme and not solely as
vocational training, as the aim is to
encourage the individual to mature and
to prepare for both adult working and
non-working life.These patterns and processes embody
liberal and humane concepts of educa-
tional practice. It is not our intention to
be unduly critical of much of the arduous
and painstaking pioneering work that has
already been put in to grapple with this
existing problem. Much of this work has,
however, been of a "containing" nature.
We feel it is necessary to ask some
serious questions of the labelling of
pupils as disruptive, and of the practi-
calties of providing for them.Labelling pupils as disruptive is often
based on the belief that the cause of this
behaviour lies in personal inadequacy, or
is rooted in family background. Narrowly
attributing such behaviour to these causes
is much too simplistic. We believe that
the contributing factors can only be located
within a very broad matrix, from
which the school itself cannot be exempt.The traditional curriculum and meth-
ods are taken as unchallengeable. Yet this
traditional schooling is itself a cause of
disruptive behaviour in some pupils. The
creation of units for disruptives helps
relieve schools of an irksome duty—that
of consistently checking what it is they
teach and how they teach it. They render
traditional schooling as quite blameless.We are aware that the identification of
the causes of disruptive behaviour is a
complex sociological/psychological study.
Further and continuing research is of tre-
mendous importance, as is the evaluation
of the short and long-term effects of the
work carried out in these units. As things
stand, there is a marked lack of evidence
upon which to base decisions. Practice is
all too often based upon trial and error,
guesswork or speculation.The problem of what kind of pro-
gramme to offer is exacerbated by the
fact that there is no specific mode of
training for staff members working with
disruptive pupils. Few initial teacher
training courses provide any in-depththeoretical knowledge, practical skills (for
example, personal counselling), or suit-
able supervised experience.Who then shall be employed to take on
the task? Those who, having taught their
academic subjects for some years and
finding their promotion aspirations
blocked, seek "betterment" through this
"new" opportunity? Those young tea-
chers who form the bulk of the unem-
ployed professionals, and are desperate
for any kind of teaching? Those whose
qualifications and experience lie in the
adjacent field of social work? Of all the
available choices, most seem to fall short
of that which is required to take on this
mentally and physically demanding task.Research and training projects are
costly. So, too, is the provision and fur-
nishing of unit bases. Extra spending is
almost inevitable if educational rather
than custodial work is to be the under-
lying consideration. Given these prob-
lems, it seems likely that the units will
function only with the greatest difficulty,
and with recurring crises.The school-based unit is a remarkable
concoction. It is politically, socially and
educationally acceptable to all but the
most extreme. Like a modern budget, it
offers something for all.The classroom teacher is pleased to be
rid of a threat. Costs of unit schooling
are fractional compared with the provi-
sion of special schools, so the taxpayers
are pleased. Local authorities can claim
credit for taking positive supportive
action. The vociferous union lobby is
pleased. The parents of both "normal"
and disruptive children are pleased—
though obviously for different reasons.It can be interpreted, by cynics, maybe,
as a bland, politically expedient form of
socialization: conformity induced pain-
lessly by therapy. However, given the
safeguards, given the programme, given
appropriately trained teachers, the
approach we have outlined may represent
the "best" answer available.Ann Berger is a student in postgraduate
studies. Gordon Mitchell is postgraduate
tutor in educational studies, in the depart-
ment of education, University of Warwick.

16

'Nothing to do with talent'

Recently a group of Newcastle teachers spent a week inside some London schools, teaching classes they had never seen before. They worked with local teachers and children under the eagle eye of Dorothy Heathcote, probably the most controversial figure in educational drama. Myra Barrs reports on the way the week developed; photographs by Ric Gemmell

An archaeological "dig" is being conducted in a primary classroom. The children are top juniors. Some boys are simulating work on the dig: there is a scientific workers' section, and a cleaning section (mostly female).

Laura, the visiting drama teacher who has set up and is leading the dig, is the chief archaeologist. She has discussed its organization with the class, and is now giving them time to get the feel of its routine. When interviewed by a teacher in the role of a reporter, the children, as the experts, are courteous and confident. But some aspects of what is going on lack authenticity: the dig is proceeding somewhat vigorously, with metre rulers being used to simulate shovels.

Laura is visited by her tutor, Dorothy Heathcote, who, in the role of a bureaucratic government official, works with her to help the children establish a more precise area for the dig, and to mark it out carefully. By the end of the session those digging are crouching down, turning over the soil gently with trowels, using scale pans and marking the exact location of each find.

Through discussion, Dorothy Heathcote tries to arrive at some realistic understanding of the dig, which any description of a find should be organised, stressing accuracy. "Precise measurements"—but also "tentativeness": "Possible uses".

Later, she explains to a group of teachers that this is "task drama", in which children can become used to roles which endow them with expertise and responsibility. The qualities of care, industry and attention to detail which are appropriate to the task being simulated are the same qualities that they are being asked to bring to the drama.



Dorothy Heathcote is one of the best-known figures in educational drama, and certainly the most controversial. Her one-year course at Newcastle University on the role of drama in education is followed by teachers from many different parts of the world, as well as Britain. Earlier this term she and her entire course, including teachers from America, Australia, Canada, Ghana, Nigeria and Scotland, paid a week's visit to the London Borough of Brent.

Each Newcastle teacher was to spend the week in a primary or secondary school, working alongside a Brent teacher. They were coming to the end of their course, and the work-teaching classes they had never seen before in an area containing several social priority schools—would obviously make considerable demands on them.

For the London teachers, there was the chance to work with Dorothy Heathcote's students and observe their methods, to participate in evening sessions she was going to run for them, and to experience the novelty of having another teacher in their own classrooms.

There was, among some of the teachers acquainted with Dorothy Heathcote's work, a sense of curiosity of a rather complex kind. The standard objection to her method has been that it is untransferable—impressive, effective, but something so peculiarly her own as to have only a limited use for others. How would her students fare, without her support? Was her powerful teaching a result of her method, or of her personality?

Dorothy Heathcote readily acknowledges that a teacher's self-confidence and sense of self are crucial parts of his or her teaching. Her impatience, however, with critics who persist in picking her performance to pieces, instead of trying to understand the principles that underlie it, is by now considerable. Her aim is learning, and she judges her own teaching and that of others by that criterion.

The field of learning may vary. The setting for a drama can range from a chemical factory to a South American jungle, from myth to historical actuality. Within these settings, she focuses attention both on the universals of human experience and on the ordinary, the authentic details that fill out the reality of a situation for the participants in the drama.

The levels are not separate. As the children enact the regular routine of a factory, and take on the roles of different kinds of scientific workers, they are simultaneously pushed to consider how far they are personally implicated in the work of the factory, and to engage with an issue such as the social responsibility of science.

Through a judicious use of role, Dorothy Heathcote herself leads the whole group in the drama, sometimes from the front and sometimes from behind; opting out altogether when a group appears to be self-propelled. And she frequently drops out of her role into a matter-of-fact discussion of the situation that is emerging, asking where it should go next, offering choices, and stressing the implications of decisions.

She prefers always to "show her workings", to a class in this way, and to involve them in the process of the drama as far as possible. She does not mind that this switching in and out of a role breaks the spell: "I'm not in the spell business", she says.

During the week she visited each of her students in the schools where they were working and discussed the sessions she saw with them. Sometimes she joined in what was going on, either at their request or on her own initiative; sometimes she simply observed the class.

An infants' school in a suburban district, Clare, from Newcastle, is making a play with a class of five-year-olds, in which they (and their teacher) are about to set out on a journey on her cart, drawn by an imaginary Dobbin.

She takes the role of a motherly woman in her kitchen, with rough pictures of pans and kitchen implements hung up around her. The infants are alert with anticipation of the journey. And also of the drama. The spines of the journey as a symbol for the experience on which they have jointly embarked is clear.

The problem the children have to solve is what they are going to take with them. When Clare asks them to gather together the things they think they will need, a number of the children do not for the moment see the need for the cart, but for the chairs and tables round the hall, which

they try to fit on the "cart"—a small, raised platform which is clearly not big enough.

The children are most unwilling to leave all the real objects behind, and try all ways to get a table on to the platform, cramming themselves underneath it and clambering on top of it. Finally, Clare persuades them to relinquish it and to concern themselves instead both with the symbolic objects that she has provided and with imaginary ones—plates and cups which she takes from cupboards and entrusts to individual children.

Once they have all they need, they set off, with Clare at the reins, most of the children on board, and a few walking beside the cart. The next step will be the planning of the journey, and the anticipation of the places they may find along the way. Before they go back to their class, Clare asks the children to make maps of the journey so far, and to think about what lies beyond the limits of the map.

Some of Dorothy Heathcote's comments afterwards are down to earth: "It's bad for horses to have sugar, he should be having carrots or apple cores." She points out the problem of the tables and chairs. Obviously the children's reluctance to leave them behind implies a desire to hold on to real-life objects, but a table or chair might have been tied on to the cart, for the drama ought to be able to accommodate the three sorts of reality represented by the physical objects, the symbolized objects and the purely imagined ones.

She thinks the map ought to be part of the situation; it should stay in the room that belongs to the drama, and not be done in the classroom. "One of the things that drama does is to create a new dimension in children's art—this is a real opportunity for a community piece of art." Again and again during the week she insists on the importance of the iconic, the need for teachers to symbolize and make manifest what they are talking about, and for children to symbolize their perceptions through pictures, maps and diagrams.



A boys' comprehensive school. A small group of third-year pupils is being taken for the first time by George, the visiting teacher, who comes from Africa.

He begins by inviting the boys, one after another, to approach the map of Africa, he has made, and point to the country they think he might come from. When a boy has made his choice, George identifies the country, writes its name on a sheet, and tells him whether he is correct in his guess. "Number three is Nigeria. I don't come from Nigeria." The boys are fairly swayed off at first, sprawling in their chairs. Gradually they begin to get pulled in by the power of the ritual. They walk across to the map more slowly, they deliberate before

choosing. Finally one finds Lesotho.

By the time George moves on, all the boys about drama and the lesson decided to give this a try. One of the drama as "trying to explain something. They agree to become employees in a museum that he has chosen to be the setting of the drama, and in which he will play the director.

Slowly they build up a picture of a museum, what kinds of exhibits it might contain, what kinds of work might go on there. Eventually most of them have taken on some sort of job, but it is obviously going to take all of George's persuasive powers to get them off their chairs.

Suddenly, Dorothy Heathcote enters the scene, playing an official with news of a bomb scare. Somewhere a bomb has been hidden, probably in a most unlikely place. "Are these chair legs hollow? Have you looked in the light fittings?" she asks.

Boys are crawling over the floor, using each wood block to see if it has been loosened. They are suddenly in the heart of a drama almost without realizing it, being examined in their roles as searchers, cleaners and guides about what the night has seen.

Two boys find and carefully detain the bomb and, after congratulating the side, Dorothy Heathcote retreats to the side lines. When the regular class teacher enters as an inspector of museums, the boys are fully launched in their roles and respond confidently to his meticulous questioning.

What Dorothy Heathcote has done is clear. She has given a nudge, or rather a shove, to a drama that she feels is taking longer to get off the ground than it needs to, given the essential agreement the teacher has reached with the class.

A mixed comprehensive school. There is a double barrier of chairs down the length of the hall. The two halves of the class have become opposing gangs of football supporters, leaving the ground after a match. They are singing songs, chanting, stamping, clapping.

John, the teacher from Newcastle, plays the role of a policeman, trying to see that they get away safely; the London teacher is a man in a house near the ground, whose wife is very ill. He appeals to the crowd outside his window to go away, way. Instantly they unite against him, using all the mob power they know, shouting him down, immune to his pleas.

John halts the action, and asks for a discussion. Were the class behaving well themselves, or as real supporters would behave? They assure him that their performance was perfectly good, but real supporters would certainly not make any notice of that kind of thing. They would behave very differently. They are now important to on and the boys want the action to go away.

"We want some action, sir." When some girls object that it is not "what?" There seems to be no way that the teacher can make the drama more reflective. It is all only too real, and the boys of the children are enthusiastic about the opportunity for licensed aggression.

John takes Dorothy Heathcote aside, and asks her to help him. She is caustic about the situation that has developed, agrees. She gets the class round, briefly to ask them what they think the value of doing such a drama is for

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To show violence is bad", one boy says.

She then says she will help them do a drama that will really show some of the implications of the violent behaviour they have been simulating. She asks them to go up as supporters at a bus stop. When they are well strung out and she has found two volunteer police officers, she herself takes on the role of a distraught and angry mother, whose child has been knocked down by someone in the crowd and who is trying to identify the offender.

Using a lot of tension, she moves along the queue, examining each person's appearance in detail. Eventually they are detained on suspicion and, after a wait in time of a couple of hours, find themselves enduring a weary wait at a police station. Ambiguity has been introduced; they are called on to express indignation, suspicion of each other, horse and boredom, and are obliged to language, not simulated action.

After the lesson, John is red-faced and kicking himself. A post mortem is held over lunch, and Dorothy Heathcote helps to unpick the stages which led to the impasse. The class had chosen to work on violence and destruction; she suggests that, at that moment of choice, John would have presented the implications of such subjects and pressed the class to do a drama which would show these. The football match was simply too close to them.

She reiterates her conviction that, contrary to what one might imagine, it is very difficult to do drama about things that are close to us in time and place. "Drama is a protection", she says, and one of the ways in which it protects is by distancing experience.

The infant department of a JMI school. The area is scheduled for redevelopment. Gillian, from Newcastle, is working with half a dozen children and their teacher in a small "nurture" group.

The children have different problems. One or two are aggressive and disruptive, others are withdrawn. Gillian has the role of a monster, who must be taught how to behave. She asks Dorothy Heathcote to be the person from the "office", who is going to stop the monster's visits unless the children will undertake to teach her.

The children enter gradually into the monster's dilemma. They advise her to read a book, and look cheerful when the "office" comes to inspect her. They show her how to take books without being caught, and talk about how she could be taught to share things.

Dorothy Heathcote then joins in as the "office", and is implacable in her criticism of the monster. The children defend Gillian and defy the unrelenting official, bawling her and calling her a liar. She plays with us, they say.

After the session, Dorothy Heathcote is disheartened with the turn the drama has taken. "I don't like this moralizing, you see. If you don't say thank you, you're not a nice person." The teachers discuss with her how children with such behavior, and different problems can join in a drama with a common element that will really involve them all.

She concentrates on what the children do about play, and tries to think of a situation which would enable them to on their different ways of handling the monster to play. Together they map out the plan for the next day, which will give the children in sharing a house the monster, a house which can learn to be together by simulating real-life scenes of sharing and running a household.

On our way out across the playground, the little boy who was most aggressive and aggressive towards the



"office". "I'm sorry I swore at you", he says. When Dorothy Heathcote reassures him, he says: "I said thank you to the dinner lady." As we drive away, he is standing by the gate, a thin figure, waving goodbye.

By the end of the week, the London teachers and the Newcastle teachers had taken part in evening sessions together, as well as teaching together during the day. For the group from Newcastle it had sometimes been a taxing week. They had been reminded of the real pressures of real teaching. It had shown them the gaps in their own learning; under pressure, some felt they had fallen into ways of teaching they thought they had abandoned.

It had sometimes been useful to explain to another teacher, with a different drama background, why they were using a particular method. But they had often felt anxiety, and even irritation, at the expert status that seemed to have been conferred on them. They were, after all, only teachers trying to work in a certain way. One imagines that, as Dorothy Heathcote's ex-students, they will have to learn to cope with high expectations of their work—both other people's and their own.

Most of the London teachers had taken the opportunity to do some team-teaching, or to take on a role with some classes. But they had also been able to sit back occasionally and get the kind of view of their own classes that they would never normally get as the only teacher in the room.

Some had been taken aback by aspects of the method they had seen being used. The teacher who had worked with Laura remarked on the slowness of the pace that she had been prepared to tolerate in discussion—how long she had been prepared to wait for children's contributions. In general, the amount of time given to discussion by the Newcastle teachers who, with their own pressures in mind, had expected things to get moving faster.

The way in which the Newcastle teachers had alternated their role in discussion with other roles, and the ease with which the children had accepted



this which had been impressive. But this technique, in which a teacher had both to take a part and also think fast as a teacher, was felt to be demanding.

The children had generally felt secure in the roles ascribed to them, and some good work had been done. The marvelous thing is, this is drama that has got nothing to do with talent, one teacher observed.

The idea of drama as a method or an approach, rather than a detached subject, was obviously central. The problem, as one London teacher saw it, was what the content of drama ought to be. "It should be about exploring concepts", he said. But he would feel on shaky ground himself in leading a drama about some of the topics that had been explored during the week. His own training had so effectively divorced learning from feeling that he was going to have difficulty in convincing them again.

Linking these two elements is certainly one of Dorothy Heathcote's main concerns. She is eloquent about the way

feeling has been banished from the classroom, and replaced by "thin mouths talking". She herself continually demands of children and teachers that they should extend their understanding and reflect on their experience.

In one discussion, she described how she had pushed a boy to be a little less cut-and-dried and a little more archaeologist-like, in describing one of his finds on the "dig", suggesting heavily through her response to him that there might be room for a more speculative approach. She parodied her critics: "There she goes again, interfering!" Then she reflected: "Well, it is interfering. It's interfering in order, within a meaningful seriousness, to say: 'Widen your area of reference, mate'."

"Teaching", she concluded, "is interfering."

Myra Barrs is English adviser to the London Borough of Brent. A profile of Dorothy Heathcote was published in the TES of July 8, 1977.

Mathematics

"Oh I can't do mathematics." "Maths really terrify me." "Fractions and decimals? Don't ask me, I could understand them." "Mum, I don't know how to do these sums." Behind such commonplace remarks lie some fundamental misconceptions and difficulties that can condition attitudes towards mathematics for life. The psychology of learning mathematics has become a major research area. The first five in this special feature examine some aspects of this research.

What goes on in the mind?

By Laurie Buxton

Essential to mathematics is the making of mental models and the manipulation of them within the mind. This can be an enjoyable activity, but few seem to find it so.

Mathematics is not generally seen as the contemplative, exploratory subject that those who enjoy it believe it to be. Oddly, this view is more often present in good infants' schools and in university research rather than at any stage in between. The reason is that for much of the time insufficient proper experience of mathematical activity is given.

In our classrooms the students are involved in two main processes. They receive information, sort it and organize it into schemas (mental structures) and they accept problems and attempt to solve them and utter the answers. Both processes are mathematical activities, but in general the first does not have an output and the second (problem solving) does. There is an assumption that the problem solving output tells us about the schemas that have formed. This is by no means certain, but we shall not enter into a full discussion here. For those who like diagrams we may put it thus:

It is seen to be the final utterance, upon which they are judged—usually by the same teacher. This statement may be an immediate oral response in answer to a question in class, or it may take the form of a written answer, later to be marked by the teacher. The student feels that a judgment will be made and sees the task as making that judgment favourable. So the attention is concentrated on O. In mathematics the situation is made worse by the belief still held by many that the single final answer is what counts.

Naturally, the expectation and underlying belief is that the output will indicate whether M has taken place or not. In itself this may be a false assumption, but even when it is not, there is danger that it is O and not M that is considered. Certainly, some steps in reasoning are usually asked for, particularly in written work, but the ways in which the mind determined correct procedures or, more importantly, followed false trails, are insufficiently explored. A detailed discussion of lines of approach by the student is of much greater



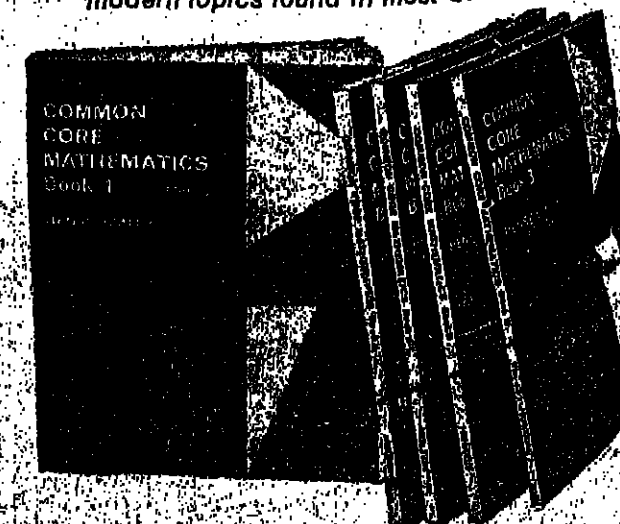
The Maths Fair organized in May by The West Midlands Mathematics Development Unit aimed to show the mathematics current national opinion, there is much good mathematics teaching, the picture and those on pages 19, 20 and 22 were taken at the Fair

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What goes on in the mind?—continued.

Evidence from the subjects of this present study suggests that there is, in fact, a much higher level of anxiety among students than many teachers would credit, and that this is present even in classes where the relationships are particularly good. This may be true in other subject areas, but in mathematics there are particular features that enhance these anxieties.

The subject is seen as an important one and one which presents in stark black and white terms, with answers that are polarized as right or wrong. The effect of this is to increase concern about one's output which will be judged, and if wrong, seen as worthless. Also the teacher, however mild, is seen as an authority figure and carries some of the aura of authority built up by one's parents and a long line of teachers.

The effect of all this is that while should be proceeding there are too many fears about O which prevent the student from constantly reflecting on what should be the primary task.

ing some stress is to indicate urgency.

The starting point for an improvement in the situation must lie in a shared understanding by teacher and learner of the importance of internal mathematical activity. It will be engaged in regularly only if it is found to be pleasurable. Doing mathematics is, in fact, pleasurable, and not only when success is achieved; exploration in itself is enjoyable.

Those of us who find this so carry problems about in our heads to work on when there is nothing particular else to do. Some quite difficult problems can be resolved without recourse to materials or to pencil and paper. Even when we do use such aids, it remains an entirely private occupation; in some ways that better defines it than as an internal activity. No other person need be involved.

Too often, when a student does, in fact, enter this private world, the teacher intrudes to ask what he is doing. It is unfortunate that a teacher-like state on the part of the student may be occasioned by his thoughts about the coming evening's activities rather than the study of mathematics and that the teacher cannot determine which is going on.

One consequence of a shifting of emphasis in what we do might be the introduction of more "mental" work. Here we must make an important distinction. The commonly used mental arithmetic approach relies heavily on the recall of numerical facts. Without entering into a discussion of the value of this, it is not mathematical activity, which is what we are concerned with at the moment. In fact, it reduces the line M in the triangle to a point, since immediate recall is generally demanded.

What is meant is work that can be carried out in the head, which may be computational or not, and of which an essential feature is that the student be asked to concentrate his thoughts but not to rush. The deprivation of external aids emphasizes the internal nature of the task. When an answer is finally offered, the teacher should pay more attention to the method by which it is reached than its correctness, for it is in such a discussion that the learning can take place. It is, in passing, interesting that in calculations performed mentally, people very seldom use the algorithms taught them for pencil and paper work in the classroom.

The problem of reducing the student's concern about producing an answer is considerable and it may be that the teacher must be the receiving and verifying agent. The practice of letting students have the answers is sensible, and using the answer to correct one's thinking should not be regarded as "cheating".

However, there are a number of mathematical problems where once you "see" the answer you can feel confident it is right. The authority for this lies in the subject and not in the teacher. The eventual need to move to that position and not depend on another person's authority is central. At some stages puzzles can play an important role since it is characteristic of many of them that you know when you have done them.

To sum up. The central activity of doing maths is not emphasized enough. We are deflected from it by wrong conceptions of our tasks, and from arising emotions generated in the teaching/learning process. Eventually the aim must be that the authority lies in the subject and not in those who teach it.

Laurie Buxton is a Staff Inspector for the H.E.O. The views expressed in the article are his own and not necessarily those of the Authority.



'Real' numbers

Margaret Brown reports on some findings of the concepts in Secondary Mathematics and Science programme based at Chelsea College, London

A 14-year-old girl interviewed by a colleague when asked to explain why $0.375 = \frac{3}{8}$, replied "We done them" (pointing to the decimal), "and we done them" (indicating the fraction, "but do ain't never done 'em together").

The obvious implication was that although maybe the natural numbers (1, 2, 3, ...) were "proper" things which existed in everyday life, decimals and fractions were entirely artificial entities with peculiar rules which were invented by maths teachers for the greater confusion of mankind.

This view has respectable historical antecedents; Kronecker, for instance, was entirely serious when he suggested that "the whole numbers were made by God—all else is the work of man".

It is not clear whether this statement was meant at the time to be interpreted philosophically, theologically or mathematically—in any of these cases its validity is highly questionable. However, as a psychological hypothesis it has considerable empirical support, at least among the population of secondary school-children we have interviewed and tested as part of the Social Science Research Council programme "Concepts in Secondary Mathematics and Science (CSMS)", based at Chelsea College, London.

It is difficult to argue that the concept of the number 357.478 is psychologically more primitive than

that of a half, but then it seems that a half, and to a lesser extent the quarters and thirds, are regarded for some purposes as "honorary" whole numbers.

The following example, taken from the section of our work on "Groups", illustrates this point. (The percentages indicate those answering "correctly" in a representative sample of 600 third-year children from 12 schools. In these and other examples the percentages for the second and fourth year generally differ by less than 10 per cent respectively below and above those for the third year.)

Question	Percentage
(a) The point (4.6, 10.2) also lies on the line. Mark its position approximately. (28%)	
(c) Plot the point (11, 4). (77%)	
(d) How many points do you think lie on the line altogether? (6%)	
(e) Are there any points on the line between the points (2, 5) and (3, 7)? (4%)	
If so, how many? (4%)	
In the case of the last two parts, the answers given were:	
"Infinity", "more than (d) 6%	
"you could count", etc (e) 4%	
"Hundreds", (d) 5%	
"lots", etc (e) 3%	
Small finite number (not ?) (d) 69%	
1 (e) 22%	
"No" (d) 18%	
"None" (e) —	

Percentages of correct responses from third-year children:

Question	Percentage
(a) Plot the points (2, 5), (3, 7), (5, 11). (91%)	
These points lie on a straight line. Draw the line. Find some other points on	

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20 Mathematics

'Real' numbers. Continued from page 19

the third year secondary, although the samples of children are different in each case.)

(A) How many different numbers could you write down which lie between 0.41 and 0.42?

(B) How many fractions lie between $\frac{1}{2}$ and 1?

"Infinity" etc (A 22%) (B 15%)

Small finite number (A 36%) (B 26%)

1 (A 8%) (B 30%)

0 (A 4%) (B 17%)

Other questions illustrated the reluctance of children to use numbers other than natural ones as the answer to a division of one natural number by another. From the work on "Measurement":

(a) Using the line CD as base, draw a rectangle which has the same area as shape B. Put a large cross if you think it is impossible.

(b) Using the line EF as base, draw a rectangle which has the same area as shape B. Put a large cross if you think it is impossible.

25% with a height between 3 and 4, with 53% giving "impossible"

72% correct, with 73% giving "impossible"

25% with a height between 3 and 4, with 53% giving "impossible"

72% correct, with 73% giving "impossible"

25% with a height between 3 and 4, with 53% giving "impossible"

72% correct, with 73% giving "impossible"

25% with a height between 3 and 4, with 53% giving "impossible"

72% correct, with 73% giving "impossible"

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72% correct, with 73% giving "impossible"

25% with a height between 3 and 4, with 53% giving "impossible"

72% correct, with 73% giving "impossible"

(it seems likely that the multiple-choice format in (ii) has inflated the percentage of correct answers).

Other division questions came from the work on "Decimals" (again children were specifically told that the problems involved decimals, which occurred in most problems and answers):

(i) Divide by twenty:

24 ... (28% with 1.2, 5% with 1 4/20 or 1 1/5, 14% with 1.4, 4% with 1 remainder 4, 11% indicating that it is "impossible").

16 ... (25% with 0.8, 2% with 16/20 or 4/5, 5% with 0.16, 43% indicating that it is "impossible").

Again we are surprisingly close to the figure of 28 per cent quoted earlier from a different sample who were able to use decimals to plot a point on a graph.

A different illustration, this time using a fractional multiplier, is provided in the work on Ratio.

"Three other eels, X, Y and Z are fed with fishfingers, the length of the fishfinger depending on the length of the eel. Z is 15cm long, Y is 15cm long, X is 25cm long.

If Z has a fishfinger 10cm long, how long should the fishfingers given to X and Y be?

X (27%) Y (28%)

A similar question with the lengths of the eels in the ratio 5:10 was done correctly by 85 per cent of third year children.

It would thus appear that the results obtained from the first graphical question are in general supported elsewhere, and one might, therefore, put forward the tentative hypothesis that, of third year secondary children, around 30 per cent can freely use decimals or fractions in various situations (although less than a half of these acknowledge that there are infinitely many of these numbers). A further 50 per cent correct respectability on the halves, with a lesser

proportion for quarters and then, and maybe even the odd eels, but 20 per cent refuse to resort to anything but the good old numbers.

It is, perhaps, not surprising that decimals should be, if anything, harder to comprehend than the subset of the fractions which are apparently less accessible than (On the other hand, this may be because of the analogy with numbers, makes manipulation of decimals rather easier than of fractions.)

A possible explanation of the apparent difficulty of understanding the nature of either fractions or decimals sufficiently to use flexibly is that they both do so on the operation of proportion reasoning. According to Piaget, proportionality scheme only when a child enters the early formal operations.

Another survey, carried out by the CSMS team, using class Piagetian tasks with over 100 children, indicates that around per cent of third years have reached this stage, which would give support to this explanation.

Another contributory factor is the nature of modern mathematics. In many of these fractions and decimals are rarely encountered in the context of application either in everyday life or other subjects like science.

Even in other areas of mathematics, where they do occur in an application rather than on a purely formal operation.

The advent of the age of the hand-held calculator should not change all this. It is not to be too optimistic to suggest that even in the use of calculators only 40 per cent of third year children can think of a decimal number like 0.61.

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21 Mathematics

False friends and misunderstandings

By Richard Skemp

Faux amis is a term used by the French to describe words which are the same, or very like, in two languages, but whose meanings are different. For example:

French word Meaning in English
histoire story, not history
bibliothèque library, not library
chef head of an organization, not only chief cook

docteur doctor (higher degree), not medical practitioner
médecin medical practitioner, not medicine

Anyone unaware that the word *faux* is using is a *faux ami* and can make inconvenient mistakes. We expect history to be true, but not a story. We take books without paying from a library, but not from a bookshop; and so on. But in the foregoing examples there are cues which might put one on guard: difference of language, or of country, or of context.

If, however, the same word is used in the same language, country and context, with two meanings, whose difference is non-trivial, but as basic as the difference between the meaning of (say) "histoire" and "story", which is a difference between fact and fiction, one may expect serious confusion.

Alternative meanings

Two such words can be identified in the context of mathematics; and it is the alternative meanings attached to these words, each by a large following, which in my belief are at the root of many of the difficulties in mathematics education today.

One of these is "understanding". It was brought to my attention some years ago by Stig Mellin-Olsen, of Bergen University, that there are in use two meanings of this word. These he distinguishes by calling them "relational understanding" and "instrumental understanding". By the former is meant knowing both what to do and why. Instrumental understanding is simply having an appropriate rule.

Suppose that a teacher reminds a class that the area of a rectangle is given by $A = L \times B$. A pupil who has been away says he does not understand, so the teacher gives him an explanation along these lines. "The formula tells you that to get the area of a rectangle, you multiply the length by the breadth."

"Oh, I see," says the child, and gets on with the exercise. If the teacher were now to say "Does not quite fit the rule of you understand, but you don't really," he would not get far. "Of course, I do. Look, I've got all these answers right." Nor would he be pleased at our devaluing of his achievement. And with his meaning of the word, he does understand.

We can all think of examples of this kind: "borrowing" in subtraction, "turn it upside down and multiply" for division by a fraction, "take it over to the other side and change the sign", are obvious ones. But once this concept of instrumental applications can be identified in abundance in many widely-used texts.

If it is accepted that these two meanings are both well-defined, by those pupils and teachers whose goals are respectively relational and instrumental understanding (by the latter, two questions arise. First, does this matter? And second, is one kind better than the other?)

For years I have taken for granted the answers to both these questions. I believe that the answer to the first is "Yes, relational understanding is a large body of explicit, of texts, but a large number of texts have not been written about why I hold this view."

Part of the problem is that of a concept which is automatically not some one situation, and in any situation whether A or B, it is not the same. It is not a matter of "can" or "cannot" but of "is" or "is not".

At a game called "football", but that neither knows that there are two kinds (called "association" and "rugby"). School A plays soccer and has never heard of rugby, and vice versa for B.

Each team will rapidly decide that the others are crazy, or a lot of foul players. Team A, in particular, will think that B uses a misshapen ball, and commit one foul after another. Unless the two sides stop and talk about what game they think they are playing at, long enough to gain some mutual understanding, the game will break up in disorder and the two teams will never want to meet again.

Though it may be hard to imagine such a situation arising on the football field, this is not a far-fetched analogy for what goes on in many mathematics lessons even now. There is this important difference, that one side at least cannot refuse to play. The encounter is compulsory, on five days a week, for about 36 weeks a year, over 10 years or more of a child's life.

Leaving aside for the moment whether one kind is better than the other, there are two kinds of mathematical mismatches which can occur.

Pupils whose goal is to understand mathematics, taught by a teacher who wants them to understand relationally. The other way about.

The first of these will cause fewer problems short-term to the pupils, though it will be frustrating to the teacher. The pupils just want to know "all the care" of ground-work he gives in preparation for whatever he wants to learn next, nor his careful explanations. All they want is some kind of rule for getting the answer. As soon as this is reached, they latch on to it and ignore the rest.

If the teacher asks a question that does not quite fit the rule of course they will get it wrong. For the following example I have to thank Mr Peter Burney, at that time a student at Coventry College of Education on teaching practice.

While teaching about area he became suspicious that the children did not really understand what they were doing. So he asked them: "What is the area of a field 20 cm by 15 yards?" The reply was: "300 square centimetres." He asked: "Why not 300 square yards?"

Answer: "Because area is always in square centimetres."

The pupils need another rule of course, relational understanding, that both dimensions must be in the same unit.

The other mismatch, in which pupils are trying to understand relationally but the teaching makes this impossible, can be a more damaging one. An instance which stays in my memory is that of a neighbour's child, then seven-years-old. He was a bright little boy, with an IQ of 140; but he regularly cried over his mathematics homework. His mistake was that he was trying to understand relationally teaching which was almost entirely instrumental.

Different subjects

Near the beginning I said that two *faux amis* could be identified in the context of mathematics. The second one is even more serious: it is the word "mathematics" itself. For we are not talking about better and worse teaching of the same kind of mathematics.

It is easy to think this just as our imagination as a player who did not know that their opponents were playing a different game might think that the other side picked up the ball and ran with it because they could not kick properly especially with such a "shapely" ball, in which case they might kindly offer them a better ball and some lessons on dribbling.

It has taken me some time to realise that this is not the case. I used to think that maths teachers were all teaching the same subject, some doing it better than others. I now believe that there are two effectively different subjects being taught under the same name, "mathematics". If this is true then this difference matters beyond

any of the difference in syllabuses which are so widely debated.

Certain advantages

Given that so many teachers teach instrumental mathematics, might this be because it does have certain advantages? I have been able to think of three advantages (as distinct from situational reasons for teaching this way, which will be discussed later).

1. Within its own context, instrumental mathematics is usually easier to understand; sometimes much easier.

2. So the rewards are more immediate, and more apparent. It is nice to get a page of right answers, and we must not under-rate the importance of the feeling of success which pupils get from this.

3. Just because less knowledge is involved, one can often get the right answer more quickly and reliably by instrumental thinking than relationally. This difference is so marked that many instrumental mathematicians often use instrumental thinking with this important difference: that they can switch to relational thinking when they want to.

There are four advantages (at least) in relational mathematics. Recently I was trying to help a boy who had learnt to multiply two decimal fractions together by dropping the decimal point, multiplying as for whole numbers, and re-inserting the decimal point to give the same total number of digits after the decimal point as there were before. This is a handy method if you know why it works. Through no fault of his own, this child did not; and not unreasonably, applied it also to division of decimals. By this method $4.8 \div 0.6$ came to 8.08.

If the above is anything like a fair presentation of the cases for the two sides, it would appear that while a case might exist for instrumental mathematics short-term and within a limited context, long-term and in the context of a child's whole education it does not. So why are so many children taught only instrumental mathematics throughout their school careers?

An individual teacher might make a reasoned choice to teach for instrumental understanding on one or more of the following grounds.

That relational understanding would take too long to achieve, and so be able to use a particular technique is all that these pupils are likely to need.

That relational understanding of a particular topic is difficult, but the pupils will need it for examination reasons.

That a skill is needed for use in another subject (e.g. science) before it can be understood relationally with the knowledge presently available to the pupils.

That he is a junior teacher in a school where all the other mathematics teaching is instrumental.

All of these imply, no does the phrase "make a reasoned choice": that he is able to consider the alternative goals of instrumental and relational understanding on their merits and in relation to a particular situation. So nothing else but relational understanding can ever be adequate for a teacher.

The above has been abridged from part of a much longer article which appeared in "Mathematical Teaching", the Bulletin of the Association of Teachers in Mathematics, No 7, December, 1976. A reprint of the full version may be had from the author, without charge, by sending a large stamped addressed envelope to him at the Department of Education, University of Warwick, Coventry CV4 7AL.

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Being good at maths

What does it entail? Asks M. Ruth Eagle

Amid all the anxieties about low mathematical attainment, it is worth remembering that some children actually do well in their school maths. What can we observe about such children? Are there some identifiable characteristics which could provide useful insights into the nature of successful learning?

Krutetskii, in Moscow, has studied aspects of mathematical ability as it is revealed in the three stages of solving a problem: gathering the information, processing the information, and learning, in the sense of remembering some thing from the experience. The children tackled a range of problems, from variations on the textbook type to puzzles, always in an informal setting, with prompts and help from the experimenter when needed.

The capable children had no difficulty in extracting the mathematical essence from the data; they were in gathering information before finding a solution. In problems where too much or too little data was given, they recognized the surplus or the gaps, which seems to indicate that they were not only analysing the data, but perceiving the whole network of relationships between them.

With easy problems, the consequences then appeared almost of their own accord, an effect strikingly demonstrated in some 'problems with an unstated question', which they nevertheless solved.

There was a tendency to see a particular problem as an example of a general type, and sometimes to solve it in general terms. The capable children thus fell into a trap when asked to write algebraically the general form of numbers that have a remainder of 7 when divided by 5. Soeing it as a multiple and remainder type problem, many wrote 5x+7. It was the less capable children who tended to notice the paradox in the problem.

The inclination and capacity to generalize, sometimes on the basis of a single example, is a feature of both information gathering and processing. Another important feature at the processing stage is flexibility: Problems on this theme, all demanded some switch in method from one to the next, or else a thinking out of alternative methods.

Whereas the capable pupils showed ability, there was some evidence that others needed to 'forget' one method before they could comprehend another, even an easier one which was demonstrated to them. This is a great disability in tackling mathematical problems; if the first method that occurs to a pupil is not appropriate, it seems that he is actually hindered from thinking of an alternative by the one already in mind.

In remembering, we are all very selective. Take for instance the trick question above, what do you remember after a week; that it was something about 5 and 7, or that it was a ruse in which the remainder was greater than the divisor? Krutetskii noted that average children told equally hard to remember specific data and general principles, essentials and non-essentials and being overburdened, their recollection was inadequate.

Capable pupils had not necessarily better memories as such, but they remembered problems, and they remembered relationships. Often in abbreviated or symbolic form. Specific data was well remembered whilst solving the problem, but then quickly forgotten.

These mental capabilities are associated with productive styles of work, as we have seen in various studies at WLE. A pair of children, recorded as they worked together on an assignment, show a clear link between the way they work and the way they remember. They recognize that there are problems which they can make sense of.

Using their 'style' of concepts and relationships, they check, and correct themselves. The drive to systematize is particularly marked by contrast with a less able couple doing the same worksheet, who seem to be lost in a maze of confusion.

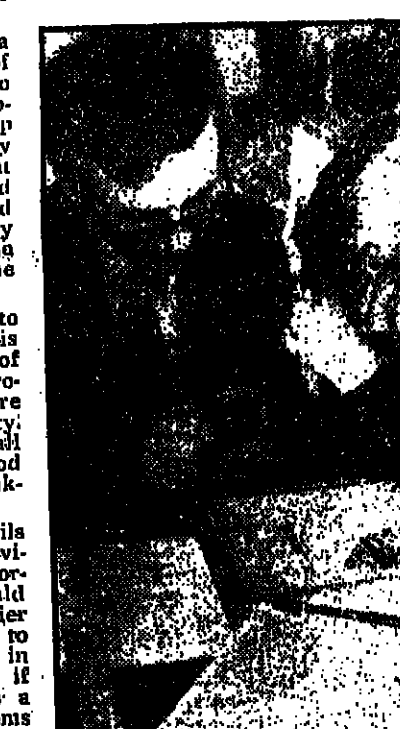
When they disagree there is no debate, the more diffident child merely withdraws. They notice none of the inherent mathematics and therefore learn little.

When children are faced with novel problems which tax their powers, there is need for flexibility and a deliberate search for the mathematical skeleton wrapped up in the words of the problem. G. Rose observed a variety of generally able people, from second formers through to university lecturers, as they tackled problems of a non-standard type.

The transcripts, as they talked their way through, show that some individuals rushed to find a solution, but more often there was a period of contemplation of the data, in which diagrams were drawn or symbols introduced, rules tested in special cases or features of apparent significance examined.

These were attempts to consolidate the solvers' understanding of information given, in order to find relationships or structures which would suggest a method of solution.

If children get stuck on routine problems they are often advised to follow this sort of procedure, to draw a diagram, to list the data, in the hope that they will then recognize the problem type. This guidance about what to do in problem solving needs to be matched with



M. Ruth Eagle is lecturer in education (mathematics), University of Keele.

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23 Mathematics

The psychologies of *not* learning mathematics

David Fielker takes an overall view of current controversies

Learning mathematics is an exceedingly complex business. There are probably as many theories about it as there are psychologists, and this is an effect of the complexity, and not a cause.

The complexity seems only to be realized by someone involved in the difficult task of getting children to learn mathematics, and Bill Brooks, writing in the June issue of *Mathematics Teaching*, contrasts this with the simplicity with which the learning of mathematics is viewed by those outside, who 'can believe it is very simple because they have only experienced the 'obviousness' of the mathematics they themselves have learnt'.

But there are other psychologies, militating against the learning of mathematics rather than supporting it, which are not connected in people's minds with learning mathematics, or are not afforded the attention due to them, or do not yet exist.

There are psychologies about adolescence. Indeed, far more has been studied and written about adolescence than about learning mathematics. What seems to be missing is any study of the effect that the problems of adolescence have on learning.

It is a well-known secret, for instance, that many pupils become worse at arithmetic between the ages of 11 and 16, in spite of—or because of?—much practice at arithmetical skills. It is oversimplistic to blame this on the teachers, as I have heard a training officer from industry do vociferously.

And those who claim that not enough arithmetic is being taught should visit some secondary schools and see that certainly the average or below-average pupil spends most of his mathematical time at it. Indeed, here the current textbooks aimed at this age and ability group provide little more than mechanical computational practice.

The other half, of course, subscribe to an alternative psychology of motivation which says that adolescents will be interested in acquiring arithmetical skills if they are shown to be necessary in 'real life'. This philosophy—for it is rather than a psychology since the evidence is somewhat lacking—ignores the fact that, by its very nature, a textbook cannot present 'real life' situations. It also assumes that what is 'real life' for an adult is the same as the 'real life' of an adolescent.

Yet, the paradox of school is that it is both an all-consuming artificiality—because it is a manufactured environment concocted for the purpose of education, and a complete world—because it is where the pupil lives a large part of his life and where he deals with most of the personal relationships that are his main concern. There may be some things from the adult world that are relevant, but this is far more complex a matter than 'arithmetic for work' or 'arithmetic for leisure'.

If you doubt that a dichotomy exists for the pupil, then remember how that ill-spoken, badly dressed, sullen, rebellious, disruptive fellow, former turned up at school the following speech day in her best clothes, well-spoken, polite, respectful and even charming! 'I've reformed', said one such girl to me, and that was her over-simplistic and egocentric view of her transition.

Learning mathematics is an exceedingly complex business. There are probably as many theories about it as there are psychologists, and this is an effect of the complexity, and not a cause.

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The complexity seems only to be realized by someone involved in the difficult task of getting children to learn mathematics, and Bill Brooks, writing in the June issue of *Mathematics Teaching*, contrasts this with the simplicity with which the learning of mathematics is viewed by those outside, who 'can believe it is very simple because they have only experienced the 'obviousness' of the mathematics they themselves have learnt'.

But there are other psychologies, militating against the learning of mathematics rather than supporting it, which are not connected in people's minds with learning mathematics, or are not afforded the attention due to them, or do not yet exist.

There are psychologies about adolescence. Indeed, far more has been studied and written about adolescence than about learning mathematics. What seems to be missing is any study of the effect that the problems of adolescence have on learning.

It is a well-known secret, for instance, that many pupils become worse at arithmetic between the ages of 11 and 16, in spite of—or because of?—much practice at arithmetical skills. It is oversimplistic to blame this on the teachers, as I have heard a training officer from industry do vociferously.

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24 Mathematics



Some Americans think they may have found an answer to their numeracy difficulties. They call it

Chisanbop

By Andree Brooks

In an improvised classroom in New Rochelle, New York, recently, a group of 40 maths teachers sat solemnly around a cluster of tables learning to count—on their fingers no less. Eight miles away a pilot group of elementary grade children were doing exactly the same.

From the smiles on their faces and the sound of the laughter it appeared they were not only having fun but finding out that an old taboo could be shattered as a useful maths technique.

The reason is Chisanbop, a finger computation method recently developed by Hang Young Pal, a young Korean mathematician living in New York, which has taken the nation by storm. It has reached a point where letters begging for more details have so deluged the Westchester home of Chisanbop's promoter, Ed Lieberthal, that he says it is almost getting out of hand.

Why the enthusiasm? What exactly is Chisanbop? A modification of an oriental method of computation using the abacus, Chisanbop utilizes all ten fingers like a human calculator. The right hand is responsible for the units (with the thumb a cumulative five) while the fingers of the left hand carry the tens (with that thumb a cumulative fifty).

Worked together all basic maths calculation (adding, subtracting, multiplying and dividing) up to nine-figure can thus be performed. Above a hundred a simple pencil and paper notation is all that is needed to carry over.

Numbers are "registered" when the fingertips of each hand are pressed down on the tabletop so that a person can actually see at a glance exactly where he or she has reached in any computation—rather like looking at the number window of a calculator.

Lifting instantly subtracts or registers a new number. When working with addition under 40, the simultaneous pressing down of the left-hand fingers also means that the numbers can be "stored" while releasing the right hand for future digit calculation.

Mr Pal created it while working with a group of American-based Korean students in New York. They were having trouble handling the more sophisticated oriental method upon which it is based. Americanization had created a situation where they evidently needed some modification.

Yet no sooner had he developed Chisanbop than many local parents, hearing about it on a network television and in the press, and others, were flocking to him. He was sufficiently overwhelmed to try it out in his own school. Along with them had a hard time.

sized with requests. School administrators from as far apart as New Mexico and Canada, responding to public pressure, asked Mr Lieberthal about workshops he was setting up and materials to go with the system.

However, along with the frenzy came the fear among the more conservative maths establishment that the phenomenon was going too far too fast. Not enough time had elapsed, they said, for quieter, more thoughtful evaluation before introducing it wholesale into American schools.

However, early feedback from the Mt Vernon school system on the fringes of New York City (the only one having used it now for a full scholastic year) indicates that it does have genuine educational merit. Teachers just beginning to work with it in other areas also remain enthusiastic.

Seth Lieberman, maths coordinator for the Mt Vernon schools said: "Our first long-term study in May unquestionably showed that the Chisanbop group had moved faster over the year than the control group. They also showed a greater degree of accuracy in their work. The gain, however, seemed more pronounced at the beginning of the period than towards the end. We don't know why."

"Our attitude survey was similarly encouraging. Aside from what appeared to be a seemingly irrational dislike of the system by a few children (the reason for which we have yet to determine), the remainder still enjoyed their Chisanbop work even after many months with it."

Mr Pal believes that some of the enthusiasm the children show derives from the fact that "it coordinates all the senses—feeling, hearing, seeing, touching—making them feel comfortable as they do it". It also removes the fear of the abstract.

Tommy Bartolino, a sixth-grader (11-year-old) at one of the Mt Vernon schools, explained: "You can honestly feel when you are starting to get mixed up. Your fingers do the wrong thing. So you 'break' and 'press' all over again from the beginning. You are more aware of yourself because you actually see what is happening as you go along."

Most teachers say they had more difficulty than the children learning Chisanbop—especially gaining the speed with which the fingers should be moved up and down. They also explain that old habits die hard.

Lucille Colman, a remedial maths teacher in the Baltimore school system, found this to be true. "I sensed some resistance to counting on their fingers openly as though I was forcing them to do something they had been doing secretly all along. They had a hard time."

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For everyman

David Roseveare introduces Everyday Maths, a new TV series from the BBC

Much has been written lately about the bare minimum of mathematical knowledge and technique which seems to be essential to survival in the modern world. The Institute of Mathematics and its Applications recently drew up its own test and subsequently published the results in the national press.

Other bodies have made similar statements about what is needed by any man; most of us can probably concoct our own list about how much difficulty. We shall all agree, for example, that people should be able to add to a set of three-digit numbers and to read a train timetable; we shall disagree on the need to be able to add together, say, the fractions $\frac{1}{5}$ and $\frac{3}{4}$.

If "everyday maths" means the

maths that every adult uses irrespective of his job, then most of it concerns money—shopping, household accounts, hire purchase, insurance, savings and so on. As long as we are simply trying to keep financially solvent we can probably get by with the four rules but most of us sooner or later need to handle percentages in some form or other. If we want to calculate HP deposits, VAT amounts and interest charges before we wait for the expert to tell us what we will have to pay.

If we can read a train timetable, we can probably make sense of most two-way tables even if we never have to construct one. Similarly, the construction of statistical graphs—bar charts, pie charts and other graphs—is not something that everyone has to do, but the interpretation of such graphs is a useful social skill.

Everyday Maths is a new television series whose content stays within the bounds I have indicated. Like its predecessor, Countdown, it is aimed at "young people in their last two years at school who are either taking no external examination in mathematics or who are expected to obtain, at best, a Grade 4 pass in CSE mathematics." There are, however, various differences between the two series.

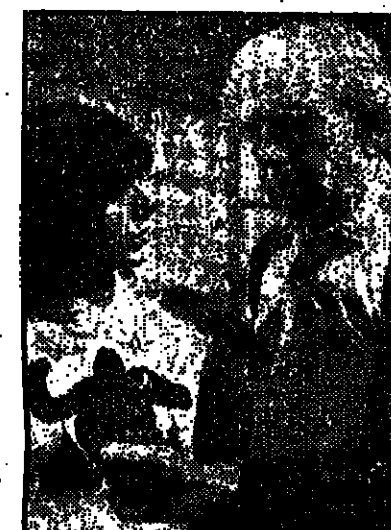
Countdown included programmes which were partly dramatized but which also had a presenter commenting on the drama and using it as a peg on which to hang some fairly straightforward teaching to camera; the presenter inevitably came off worst.

Everyday Maths is all dramatized. To watch some character on the screen who is relatively slow-witted can be funny and, because enjoyable, a useful piece of education. To watch a presenter talking to the camera, or commenting, unseen, on diagrams, is to be insulted if the pace is too slow, or bewildered if the pace is too fast.

To get across mathematical ideas through drama over a whole series, regular characters are essential in the stories are not to get bogged down with introductions. In Countdown we used teenage characters but ran into the difficulty that conversation between ordinary teenagers is seldom on matters mathematical. In Everyday Maths the scriptwriter John Tully has hit on a dramatic device which solves many of the problems.

Sam Lucas, a widower, played by Arthur English, and his 18-year-old grandson, Mike Selby, played by Jack Wild, are forced to fend for themselves while Mum is away looking after a sick relative. Both characters are congenitally lazy and have

25 Mathematics



hitherto let others do their maths for them. The double generation gap enables either character to score points off the other without getting the viewing audience too distracted by a traditional parent-child relationship.

Of course, other characters have their part to play in the education of Sam and Mike. Vincent, a garage forecourt attendant and friend of Mike's, helps him unravel some of

the mystique surrounding pocket calculators; Sam's friend Sid, a groundsman in the local park, puts Sam right on matters of metrication and so on.

The series runs for three terms each school year and is expected to continue until 1981-82. A sample episode will be broadcast in Preview on Friday June 16, from 11.35 a.m. to 12 noon on BBC-1. In 1978-79, regular transmissions are on alternate Thursdays at 10.05 a.m. starting on September 21 with repeats on the following Monday at 9.38 a.m., from September 25.

Autumn Term, 1978: "Pounds and Pence." Money, decimal fractions. "The Long and the Short of it." Metric lengths. Conversion tables. "A number of things." Numbers as codes. "Time and table." Railway and bus timetables.

"The Round-up." Rounding numbers up and down.

Further details are in the teachers' notes which accompany the series and which contain worksheets for pupils. Delivery can be guaranteed for orders received by July 7; details in the BBC Annual Programme for 1978-79, sent to all schools last March.

David Roseveare is Senior Mathematics Producer BBC Educational TV.



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26 Mathematics In at the beginning

Ernest Choat on pre-school mathematics

It is commonly assumed that children's mathematical education begins when they start infant school at the age of five. Many parents prepare their children for this day by teaching them to count. Many teachers and educationists make similar preparations with plans for "primary mathematics".

Such impressions are incorrect. Monologuing the number names does not ensure that children have acquired the "numberness of number". Their introduction to "primary maths" is not the children's first encounter with mathematics.

Children do not wait until they are five years old before they begin to acquire mathematics. Much mathematical learning has gone on before then. Children are surrounded by space from the day they are born. They are occupying, feeling, and seeing space.

Later, they begin to explore, manipulate and control the spatial elements of shape, size and position in efforts to organise their environment so that space becomes the natural means for developing intuition, creativity and inquiry.

Mathematics, therefore, is everywhere in everything, but each child does not have the same prospect for mathematical development, and even opportunities may vary enormously. Some young children remain at home with their parents or are entrusted to child-minders and will differ in their activities and experiences according to the toys, space, outings, etc., and the degree of interaction with an adult.

The BBC TV series *You and Me* is providing valuable guidance to the adults responsible for such children on how to encourage mathematical development. Other children, who go to a play group or nursery school, will be free to explore in many activities (particularly if they attend the latter), but the extent of mathematical development is dependent on the insight of the play-group leader or teacher.

Mathematics in the nursery school is an elusive topic. Many nursery school teachers will happily extol why language is essential for children in the early years, but mathematics is treated with some suspicion. Why does this situation exist?

It may be that mathematics arouses in nursery school teachers a picture of children being allocated specific mathematical work. Alternatively, because of their own experience at school, the teachers may have rejected mathematics as developed in the curriculum of the subject. Or, and most likely, the teachers are innocently unaware of what mathematics is, and are not conversant to develop the mathematics which is inherent in children's learning situations.

It is hoped that the booklets produced by the Schools Council "Early Mathematical Experiences" project, directed by Geoffrey and Julia Matthews, will assist greatly in this direction. Also, to provide teachers with an opportunity to develop a deeper understanding of the relevance of mathematics in the education of young children, at Goldsmiths' College we have established the first Advanced Diploma to include pre-school mathematics.

This question which emerges is not what is mathematics for pre-school children, but where is mathematics? The answer is not a theoretical question, but comments assembled by teachers from their observations. As children's first mathematical discoveries concern space, they will become aware of the topological properties of shapes, whether they have many or no holes, and the awareness of objects to each other and to themselves.

Distance means little to a young child who cannot understand what is meant by "near" and "far", "between" or "close". When they are covering their perceptual world, children build up mental pictures, and more memories of objects, patterns and relationships for recall and use in identifying spatial objects.



through their perceptions of touch, sight, sound, smell, taste, balance and movement.

Thereby, the principle is not to devise carefully structured activities, although these may have a place on occasions, but the provision of a mathematically stimulating environment and for the teacher to be aware of the possibilities that exist in the everyday activities.

For example, through water play young children discover the conceptualization of full and empty. They acquire the notion of equality as they fill two similar bottles to the same level, and invariance of the same when they pour the same amount of water into different sized vessels. They discover the speed and flow of water as they experiment with water poured into funnels and plastic tubing, and attempt to fill containers in which holes have been punched.

Dry sand provides some similar experiences of a continuous quantity by pouring and filling, but children discover that sand possesses other properties and behaves in a different way when water is added. It becomes discontinuous and can retain the shape of a container when filled. Comparison of weight between a quantity of dry and wet sand is a further possible activity for the children.

As young children learn through tactile experiences, a wide variety of materials should be provided to allow them to explore and discover for themselves. Clay and dough can give these exploratory experiences as children feel, thump, and poke the material. The substances may also be divided into smaller amounts.

continued on opposite page

27 Mathematics Polymaths for the mature student

Introduced by F. W. Kellaway

At long last, there is general recognition that all is not well with the mathematical attainment of school leavers. There is also recognition, though with reservations in certain obvious places, that some of the deficiencies may be due to an inadequacy, qualitative and quantitative, among teachers of maths.

Some belated steps are being taken by way of remedy. Retaining of existing staff so that new skills may be acquired, or a transfer of skills effected, has brought a little relief in some areas where shortage is especially acute. It is only sensible to acknowledge, however, that a poor teacher of, say, history or French is not the best sort of material for conversion to create a teacher of maths.

The whole question of compatibility with a subject, or with a job, cannot, in fact, be glossed over. In appointing and recommending submitted by the Council of the Institute of Mathematics and its Applications following the Green Paper on Education, the point was made that some 40 per cent of teachers in primary schools have no exam evidence (such as an O level pass) of even modest mathematical attainment.

The IMA went on: "One conclusion that we draw from this is that either their own school education was inadequate in that mathematics was not taught to them, or was badly taught, or that, in a minority of cases, their aversion to the subject was such that they would certainly not make suitable teachers in primary schools."

As for the secondary stage, where on average there are only 1.4 graduate mathematicians a school, the IMA believes that there were inadequate in that mathematics was not taught to them, or was badly taught, or that, in a minority of cases, their aversion to the subject was such that they would certainly not make suitable teachers in primary schools."

Other sources are the Armed Services, college of education staff, and professional women wishing to return to the teaching profession.

The issue of an improved full-time training course for teachers planning to become teachers is too complex to be considered in these notes. Details of a new, opportunity for a second start in maths for mature students are, however, relevant and significant.

A conference on part-time courses

In the beginning it continued on, children develop spatial awareness and begin to conceptualize dimension, distance, height, speed, weight, and balance.

The world in which children live should not be overlooked as an important source of their mathematical development. The seeing and understanding of the world around them depends upon children's perceptions of patterns into it. By the time they are attempting to do what surrounds them, they are already attempting to adapt to the environment, and to make sense of the differences and similarities of distance, shape, size, and number.

Although these are only some indications of the importance of mathematics in the teaching of mathematics, the teaching of mathematics is vital to the child's development. The teacher should be an active participant in the activities by acting as interpreter and guide. This calls upon the professional skills of a teacher, to use her skills of observation and knowledge of child development for when to take an active role, when to stand back, when to interpret, when to advise, and when to interpret. The teacher, thereby, becomes an associate in children's activities.

Pre-school mathematics, therefore, is the development of children's awareness of spatial relationships, and the use of these relationships to acquire the numberness of number. This distance mathematics scheme for young children.

In maths held at Lanchester Polytechnic in 1973 heard a paper from Dr D. J. G. James on a new "preliminary course". A study group was set up to foster the project which by last year had attracted some 400 students annually in a score of polytechnics and colleges.

A team of staff from Lanchester, Brighton, Cheltenham and Manchester devised the course, prepared special textbooks of an unusual but highly successful sort, conducted assessments and presented, through the candidate's teaching institution, a certificate to those whose performance was deemed satisfactory.

Dr James himself has acted as course leader, with Mr P. A. Armstrong, of Manchester Polytechnic, as a chief assistant. The writing and assessing has been a massive co-operative effort. In the words of Dr James, "the summary title Polymaths was coined partly as a play on the word polymath (someone skilled in many fields) to indicate the wide applicability of mathematics. It was decidedly not an attempt to restrict the course to polytechnic institutions. Indeed, from the outset Polymaths has been offered at a variety of institutions and, under the new aegis about to be explained, its appeal will undoubtedly now spread very widely."

For the team which has produced the course and the books realized that a new organization is essential. The resources of a professional institution, and its staff, would represent an answer to the growing problem.

Happily the council of the IMA was responsive to an appeal. With the full approval and agreement of the Department of Education and Science (though unfortunately without any financial support from it) the Institute has assumed responsibility for Polymaths. The council has established an executive committee to administer the course; its first meeting was held in April this year.

The executive committee has authority and standing. Its membership includes industrial representatives (from, for example, Rolls-Royce and Esso), a university vice-chancellor, distinguished teachers, and representatives of the academic team responsible for initiating and developing the course.

Before giving approval for a course, the committee will need to be satisfied that the establishment proposing to offer it has appropriately qualified teaching staff, and that satisfactory arrangements for assessment can be made. It is greatly

to the credit of the team who devised the course and steered it through its early stages that standards have been set high. Largely because of this, entry of successful candidates in degree or higher national diploma or certificate courses has been facilitated.

The new executive committee will undoubtedly maintain standards, both in terms of course content and assessment and of national acceptance. The probabilities are that within a year or so the number of candidates for the qualification will be in four figures, and that there could be some 50 centres at home and overseas. (There is an undoubtedly substantial potential interest in an IMA Polymaths Diploma outside Great Britain.)

The course aims to inculcate interest and confidence by a new approach backed by appropriate textbooks in which the relevance of mathematics predominates. Students must be at least 20 years old on entry and prepared to study intensively for a full academic year. "Class contact" hours total 125; students do much work on their own, and also meet their lecturers for individual tutorials.

Thus the course is demanding, especially since there are no formal academic prerequisites for admission. But success means both a satisfaction in itself and a qualification accepted by CNA, the Open University and a variety of institutions for entry to degree courses.

Students so far have included well-skilled and skilled technicians, managerial staff, married women seeking a qualification before returning to work, and teachers. With the greater availability of the course, in a variety of centres, it is certain that many potential teachers of maths will find Polymaths an ideal rung on the ladder to qualification. "In-service" attendance of teachers could also flourish.

Which ties together an implicit wish to strengthen the teaching of maths in our schools with one feasible way of finding more, and more suitable, teachers. The future of Polymaths is now assured; it could be a prototype for other comparable ventures.

F. W. Kellaway is honorary secretary of the Institute of Mathematics and its Applications, and chairman of the education committee of the institute. He is, however, writing in a personal capacity, and the views expressed are not necessarily those of the IMA.

each week) may be obtained from The Admissions Officer, Goldsmiths' College, New Cross, SE14 6NW (telephone 692 7171 ext. 228). Dr Ernest Choat is Principal Lecturer in Education and Mathematics, University of London, Goldsmiths' College.

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Children's literature

Young, and not so young

Audrey Laski reviews some more paperbacks

I am becoming increasingly concerned about Pencilcase Books: initially I felt there was merely a troubling uncertainty about intentions, but now really bad errors of judgement are creeping in; and they are almost always a sign of a basic misconception.

William March's *The Bad Seed* (Pencilcase 75p) was a thoroughly nasty piece of work when it was a successful novel and film for adults; it should not be given a seal of quality for adolescents. John Rowe Townsend's *Noah's Castle* (Pencilcase 75p) is, of course, a different matter; he writes deliberately and honourably for young readers, and his vision of a possible immediate future, in which inflation explodes so that families to one's immediate family and the human family come into question, is telling.

But I wonder on what criteria the decision is made that this is to be a Pencilcase, while *The Witch of Blackbird Pond* (60p), Elizabeth George Speare's tender but also sharply drawn historical romance about a pampered child of Puritan New England coming to terms with the harshness of a new world, is a Pencilcase recommended for readers of 13 and over. If Paul Zindel's *My Darling, My Hamburger* (60p) had not been snapped up by Lions, would it have been a Pencilcase? Either way I suspect it has been over-rated; the touches of realism and the unhappy ending do not really prevent this from being a sentimental story about young love blighted by parental narrow-mindedness and unnecessary misunderstanding.

A much more bracing approach to the problems of the impossibility of parents is taken by Louise Fitzhugh in *Nobody's Family is Going to Change* (Lions 60p); her black, 11-year-old heroine ends the novel in a genuinely realistic state of tension between her affection for her parents and her awareness of their hopelessness; she will have to change because they can't. Something of the same loving scepticism about parents is, as always, present in Diana Wynne Jones's *Curlew* and *Chadder* (Puffin 60p); though set in an imagined country of warring kingdoms, in which the mythic is immanent, it retains her usual piercing perceptions of the complexities of family relationships. Pamela Sykes's *Come Back Lucy* (Puffin 60p) also mixes fantasy—a ghost story—and family life compellingly. If not with such originality and distinction, the recent television adaptation will secure many readers for this satisfying story.

An understanding of sibling stresses for younger readers is valuable and not so easily found; Catherine Storr's *Puss and Cat* (Young Puffin 50p) is lively and useful on the problems and benefits of being identical twins, especially with a maddening older brother. The *Critter* Ellen Canford (Puffin 60p) again replays for younger readers some of the agonies of Louise Fitzhugh's clever heroine and the heroine of her earlier story *Hurricane*; it's as if one needed to know at younger and younger ages how to cope with being the uncomfortable different member of your community. Even

Beverley Cleary's motorcycling mouse, who makes a welcome return in *Runaway Ralph* (Puffin 60p) has this problem.

On the other hand, there is false distinction as well as true; in Philip Turner's curious pig-tale, *Wigwag* and *Homer* (Dent Dolphin 65p), Homer believes himself to be a truly scholarly and brilliant pig, but it is his modest bride Wigwag who becomes the ruler of Sanctuary Island. If you're a real genius, like Jan Wylie here, you can astonish your family by inventing *The Furious Flycycle* (Puffin 40p), but I don't find this brilliant boy and his professor mentor as entertaining as the great Branneswain; it was refreshing to turn to something as everyday, as real and yet as exotic as a Western reader as Naomi Mitchison's *Snake* (Lions 50p) about two little girls in the African bush and an exaggeration that goes too far.

For very young readers or their parents there is a wonderful glut at present of delicious picture books and easy readers. Astrid Lindgren has invented yet another naughty child, *Lotta* (Young Puffin 50p), whose exploits will provoke many a shock of recognition, as will, though disguised by feathers, the well-meaning havoc caused by the hero of *The Penguin and the Vacuum Cleaner*, by Carolyn Sloan (Illustrated by Jill McDonald, Puffin 60p). This is visually splendid, as is Jennie's Hat, as one expects of Ezra Jack Keats (Harper and Row 60p).

Visually enchanting, though perhaps too delicate for all tastes, is *Miss Juster's Garden*, by N. M.

Boedcher (Picture Lions 60p). I applaud the idea of the Picture Dictionary, by Richard Heffer (Picture Lions 60p) and some more, Most, by Judy Freudenberger (Illustrated by Richard Heffer, Picture Lions 60p) and enjoy the pictures that may be caused by giving small English children didactic texts on and in American English.

For learning purposes, the wonderfully repetitive rhyming picture books *My Cat Likes to Hide* in Boxes by Eve Sutton (Illustrated by Lyndley Dodd, Picture Puffin 60p), *Farmer Fisher* by Jonathan Coudville (Picture Puffin 50p) and *Apple Pies* by Ruth Orbach (Picture Lions 60p) may be more useful. More useful, too, perhaps, than the deliberately planned easy readers, of which *Ren's Fish* by Chris Connor and Alison Prince (Puffin Easy Reader 50p) is a fair example. Here the effort to enhance readability may diminish interest.

Finally, a further handful for upper juniors and lower secondaries. *The Black Stallion* series—*The Black Stallion* and *White* by Walter Farley (Knight 60p) is presumably aimed at horse-mad boys and girls getting bored with pony books. It will be said if its production-line thrillers entirely divert attention from quiet adventures like *Minnow on the Say*, an early Philippa Pearce (Puffin 70p). This may be rather old-fashioned in the way it touches its folkloric to impoverished and unimpassioned aristocracy, but it still contains more treasures than merely the one hidden behind a riddling rhyme, for which the boys hunt with such tenacity.

Woodcutting. By George Jark. Pinnus 14.95, 273 01169.1. First published in 1903 and now available in paperback form this classic will no doubt go on being taught and read for another 70 years. The reader is told clearly in the preface that the author's first aim is to write a trustworthy textbook of workshop practice, and that design is an essential part of good workmanship.

The 27 chapters are easy to read and more than adequately cover not only the craft itself but also the choice of subject-matter, theory of design, tools and equipment and the practical diagrams, the clarity of the text and the way in which the book is taken regularly from the shelf not only for reference but also for leisure browsing.

Don Canton (Hilary Wilson and 'Writing and Illustrating and Lettering' by Edward Johnston are also available in the same format.

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Nationwide

Marketing Geography. By H. Davies. Methuen £4.55, 416 70700.3. 250 pp. 1981.

Retailing generated sales of about £15,000m in 1971 and is providing jobs for two and a half million people. It became a great contributor to the national output. Yet there has been an attempt to make a unified approach to a marketing geography that may be caused by giving small English children didactic texts on and in American English.

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More than fossils

Geology in the School Curriculum: Schools Council Working Paper 58. By H. Davies. Educational 1.85. 23 50390.1.

This paper was published in spring 1977 and is being followed up by a request for a Curriculum Project Schools Council Working Paper 58 should be read by all teachers in any aspect of science education. It makes the case for a more integrated approach to the study of geology in schools and that the usual habit of thinking of geology with fossils is seriously wrong.

Increasing links between science and business in the likely to make marketing a major subject in the curriculum. The Working Paper is the result of the deliberations of a review group that worked from 1973 to 1975, and so it is already rather old. Its proposals for a curriculum project in geology right across the curriculum have now been modified to one for a project across the science curriculum for ages 11 to 16. Its intention is to produce materials that can be used in a wide range of courses, such as physics, chemistry, biology, integrated science, environmental studies and geography as well as geology itself.

The document shows that geology is a vehicle for introducing a wide range of skills and concepts from a concrete and inherently interesting set of experiences. But why has geology been for so long the poor relation of the other school sciences? Why are so many science teachers still so reluctant to put this right? Why was there no Nuffield geology?

Dr Warner has written a book about them "as engaging creatures, as important arthropods and as model crustaceans"—and he has obviously enjoyed writing it. The first four chapters deal with the organization of a typical crab. Other chapters deal with the way they live their lives and their social behaviour.

The author's line drawings add much to the text, and the 16 pages of references to research papers (all of which have been written in the past 12 to 15 years) are equally valuable.

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Engaging creatures

Biology of Crabs. By G. F. Davies. Pinnus 14.95, 236 40087.8.

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Tom Copley country

B. S. Roberson

South West England. By H. D. Black. Cambridge University Press £1.70. 521 21204.9. The South West. By Cyril Waterhouse. Hodder and Stoughton 95p. 340 18795.6.

In the winter of syllabus change, a study of the homeland remains steadfast in the British Isles, and within this there is considerable concentration, particularly at CSE level, on the local area. Both these books cater in this way for the secondary school home market, each series providing in separate volumes regional cover of the whole country. As both are of a high standard, it will be difficult to decide which to purchase.

H. D. Black's *South West England* is most attractive. The scholarship is good, the writing clear and in-

teresting and the illustrations in map, diagram and picture varied and well reproduced. There is much new material and specific details such as that of the Dartmoor barrow, the year, and the vessels using Poole Harbour. Although the bulk of the content is descriptive geography, models are gently and skillfully introduced, that of a holiday resort, for example, being made after the detail of Torbay has been studied.

The area chosen extends rather beyond the conventional south-west, perhaps as a matter of editorial convenience. It thus permits a useful change of coastal features, from east as Hurst Castle Spit. The level and bulk of material is at least that of a good O level class, to cover all the British Isles with this series would require generous timetabling.

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The area chosen extends rather beyond the conventional south-west, perhaps as a matter of editorial convenience. It thus permits a useful change of coastal features, from east as Hurst Castle Spit. The level and bulk of material is at least that of a good O level class, to cover all the British Isles with this series would require generous timetabling.

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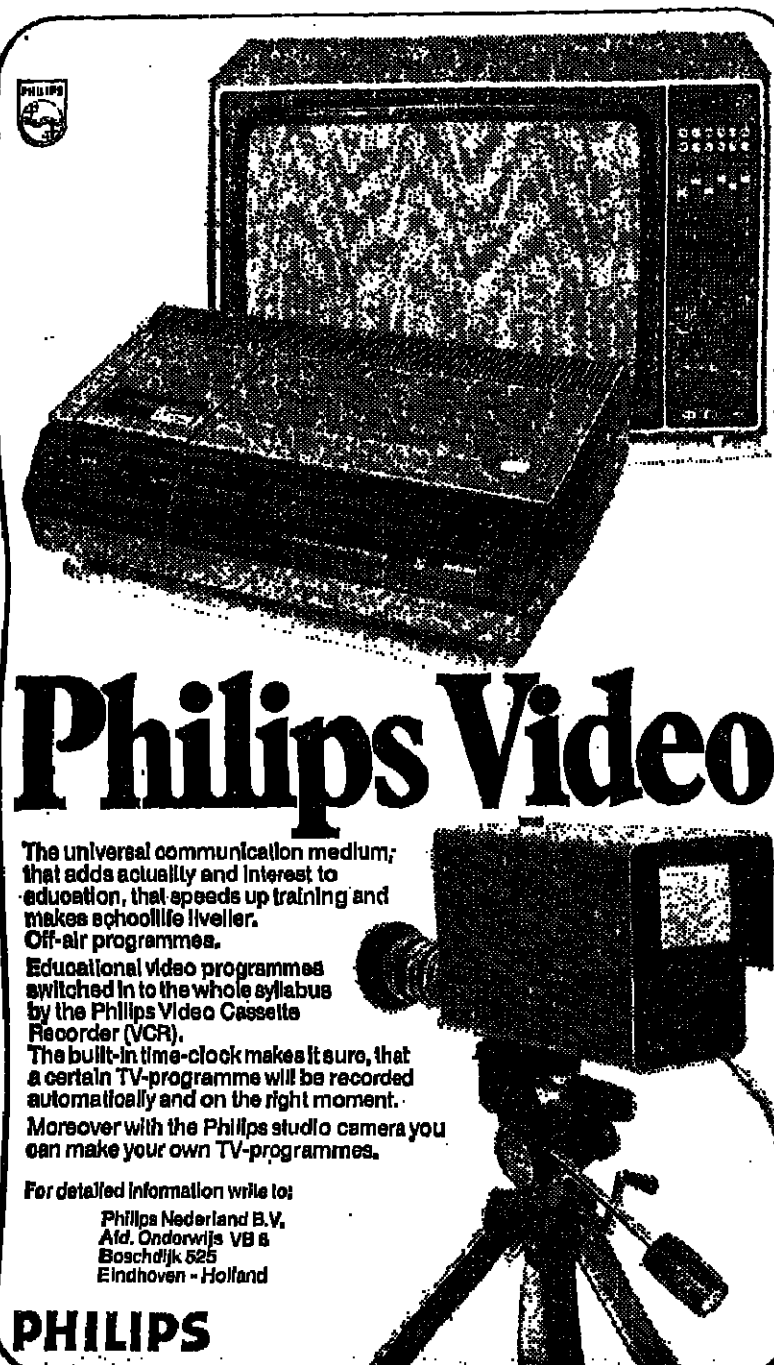
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Teacher training: a suitable case for the campuses?

Dutch teachers get their training from a number of sources—but the universities are not among them

Any visitor to academic Holland is quickly struck by the enormous prestige and power of the universities.

With no competing polytechnic system, the universities reign supreme as the arbiters of what are, and are not, suitable subjects for higher learning to concern itself with.

Education is a borderline case for campus respectability. There are only a handful of pedagogues professors in the country and almost no university courses are given for students who want to train as teachers.

Lofly, the universities argue that their function is solely the pursuit of traditionally "pure" knowledge. A professional training component would lower the academic value of a degree. And all under the aegis of the universities insist, should aim at preparing students to go on to a doctorate after graduation if they want to.

Their detractors, on the other hand, accuse university academics of closing their eyes to the need for legitimate change and of wanting power without responsibility to society.

However that may be, university graduates, despite their often almost total lack of training, can step straight into plum jobs in the grammar schools and the two top classes of the higher general education schools.

Salaries at these levels are normally well over 20 per cent more than in primary schools and significantly higher than in the rest of the secondary sector.

What angers many educationists outside the universities is that virtually only university graduates are allowed to teach at these levels.

The sole exception is the primary and lower secondary teachers who study in the evenings at special institutes monitored by the universities for a diploma of Bachelor level which entitles them to apply for senior secondary posts.

Traditionally, evening classes have been the only way for upward teacher mobility in Holland. Otherwise, the sectors are rigidly separated. Different training avenues lead to precisely defined job possibilities.

Thus, to become a pre-school teacher students must have had four years of intermediate general secondary education plus three years of teacher training and a year working in a school.

Would-be primary teachers have to have five years of higher level general secondary education and three years at teacher training college. Grammar school teachers need six years as pupils in a grammar school followed by a university degree.

Until recently the various types of general secondary education schools were staffed by ex-primary school teachers who had taken an evening certificate qualifying them for lower secondary subject work.

Since 1970, however, special colleges of education have been in operation which train general secondary education teachers. Several of these are now spread around the country at major centres such as Delft, Nijmegen, Tilburg, Utrecht, Amsterdam (two) and Leiden.

By 1982 it is planned that these institutions should have a total population of about 17,000. Politically, the colleges have been controversial. Their development has been linked with the plans of the previous Labour government to promote a "middle school" to replace the four kinds of secondary education currently available.

Supporters of the planned comprehensive "middle schools" now announced to stay very much on a pilot project basis with the advent of the new administration argued that differently trained teachers would be needed to staff them.

Opposed as they were to any

major restructuring of secondary education which might "dilute" standards or make upper secondary pupils less well prepared for traditional courses, the universities lobbied against the colleges.

Although their efforts were unsuccessful they have managed, despite their lack of pedagogical expertise, to gain a say in the appointment of staff to the colleges.

Students at the colleges need five years of higher general education, the same as entrants to the teacher training colleges.

But whereas the courses at the teacher training colleges last only three years and only emitte their diploma holders to teach in primary schools, the college of education programme lasts four and a half years.

Two subjects are specialized in, often one in the arts and one in the sciences, and much emphasis is placed on practical training. At the Delft college of education, for example, a third of the time is taken with professional preparation.

After graduating from the colleges students have a right to go on to study one of their college subjects at university in order to qualify to teach in the grammar schools and upper forms of the higher general education schools.

These supplementary studies can take anywhere between two and four years before the students are ready to start their final.

Paradoxically, the more "modern", practice-oriented and inter-disciplinary a college of education courses, and the more successful a student is in coping with this approach, the longer will the time needed be to adapt to the traditional university courses.

A further point of friction between the colleges and the universities is that all college staff must

legally be university graduates. College education graduates, therefore, cannot teach in a university, whose traditions of learning teaching are often so very different.

This also means, according to such people as Mr Jacobus, principal of Delft, the country's youngest college, that many ex-students from the universities for a while highly qualified in their subjects, underestimate the importance of practical vocational training.

"We make the best of a somewhat bad job", says Mr Roos. A good number of the staff, therefore, are former primary or secondary teachers who took their way to a degree through one or two years of university study.

Additionally, the staff are given greater leeway in what they appoint.

Meanwhile, the training colleges have problems of their own. With the continuing fall in the birth rate and the resultant primary school unemployment, many would-be students are now staying away.

Closures are clearly warranted in many cases but many of the training colleges are determined and loth to shut their doors to a "rival" keeps open. The does national aspect also prevents it would otherwise seem sensible amalgamations.

Reforms of hope are the promise of the Ministry of Education that primary jobs may be on the way and the forthcoming combining of nursery and primary schools into new basic schools for all four to 12-year-olds.

This will mean new teachers in a fresh influx of students and nursery teachers in a new group of retrained.

Paul Moorhead

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Higher education is under severe pressure to cut costs, but...

Universities fight to stick to traditional role

by John Richardson, Netherlands correspondent

The unique nature of Dutch higher education is well illustrated by the uproar that has resulted from an Education Ministry proposal last month for new four-year first-degree courses followed by one to two years' specialized courses for the top 40 per cent graduates.

The proposal is designed to bring Dutch universities into step with other Western models of higher education and the present needs of Dutch society.

The explosive growth in demand for higher education, coupled with its high cost and the impending cuts in government expenditure, has led Dr Arie Pais, the Dutch Minister of Education, to take a firmer stand in demanding the restructuring of university courses than any of his predecessors.

His plans for a two-phase structure, which will be cheaper and lead to qualifications which are more suited to the requirements of commerce and industry, have met with fierce opposition throughout the Dutch academic world.

The need for change has been recognized since the mid-1960's and the debate as to the final nature of the restructuring has been going on for over a decade. Feelings have often run high, with senior academics accusing the government of the day of crude bullying, and Ministers being convinced that their plans, approved by Parliament, were being deliberately sabotaged by university teachers determined to protect their privileged status quo at the expense of the general good.

First-degree courses, now the average student seven-and-a-half years to complete, contain a significant research element for all, and have drop-out rates in most departments of over 25 per cent.

If the universities were to continue on their present path, what is already probably the most expensive higher education system in the world would be beyond the means of even the gas-rich Dutch.

All school leavers who have passed their secondary school general education leaving examination have the right to go to university. But because of the pressure of applications, an over-lengthening list of courses such as medicine, veterinary science and dentistry are now subject to a *numerus clausus* selection procedure. This is based on a weighted lottery which favours the applicants with the highest grades. Those who are unlucky are guaranteed places in other faculties.

The number of students exercising their right to university education has grown rapidly in the post-war period. Between 1960/61 and 1977/78 the total number of enrolments increased from 40,727 to 133,200 and the number of first-year students from 7,201 to 21,800—increases of over 200 per cent.

The rise per year is averaging 30 per cent, with women taking a greater share of the available places. Last year the percentage of female students overall went up from 26.2 per cent to 27.4 per cent, and from 31.2 per cent of first years to 32.1 per cent.

The university expansion since 1960 has in itself led to this sector taking an ever-increasing share of the education budget: it now accounts for more than 27 per cent. The high costs are also partly the result of the high-wage, labour-intensive nature of higher education.

Lecturers, for example, earn over 60,000 guilders (£15,000), readers over 88,000 guilders and full professors 112,000 guilders. Professors may continue working on full salary to the age of 70, and pensions are inflation proof at 70 per cent of the last year's gross income. The average annual Dutch wage stands at 30,000 guilders.

Both the previous Socialist-Christian Democrat coalition and the present Liberal-Christian Democrat government have made it clear that the inflation-adjusted global sum for university support will not be allowed to increase further.

The 13 main institutions which provide university education can be divided into three groups. First, the universities of Leiden, Groningen, Utrecht, Rotterdam and the city of Amsterdam and the new University of Limburg, which either have a full range of faculties or, as in the case of Limburg, plan to do so.

Second, the technological high schools of Delft, Eindhoven and Enschede, which, together with the Agricultural University of Wageningen, concentrate on the training of engineers to university level in a broad range of technological faculties.

Third, there are the universities which are of religious origin, the Free University of Amsterdam (a Protestant and "free" of Catholic influence historically), the Catholic University of Nijmegen and the Catholic University of Tilburg, which have, like the first group, arts, social science and science faculties.

All award the first degree of *doctorandus* and/or *ingenieur*. Graduation to a doctorate usually takes place after some years of professional work when a thesis is orally defended in a form of medieval academic court.

Other smaller, degree-awarding post-graduate institutes associated with the Netherlands Universities Foundation for International Cooperation (NUFIC), such as the International Institute for Social Studies in The Hague (ISS) and the International Institute for Aerial Survey and Remote Sensing in Enschede (ITC), provide education for post-graduate mid-career course participants from abroad who cannot fit easily into the Dutch system due to language difficulties and the current lack of international comparability of Netherlands qualifications.

Here the language of instruction is normally English or French, and internationally recognized Masters' degrees are awarded after one to two-year courses.

All of the above institutions are state-supported, and subject to budgetary control by the central government. This is also true for the host of small non-university denominational and montechonic institutes which form the less prestigious and less generously funded branch of the tertiary system.

These third-level colleges also have growing numbers of full and part-time students, and work mainly in the fields of vocational education such as primary and lower secondary teacher training, technical training, laboratory sciences, musical education, agriculture, domestic science, business, social and cultural work and art.

They differ from the universities in that they already have two to four-year courses, teaching loads and working conditions similar to those of secondary schools, close government supervision, financial control, lower status and, in general,

poorer career prospects for their graduates. They have about the same number of full-time students as the universities, plus some 60,000 part-time enrolments.

In terms of lower drop-out rates, shorter courses, lower staff salary bills and inevitably cost per graduate, they are more efficient than the universities.

But in trying to evaluate them in terms of effectiveness in a society which is short of raw materials and dependent for its future prosperity on the generation of scientific knowledge with technological and industrial spin-offs, they can hardly be compared with the universities.

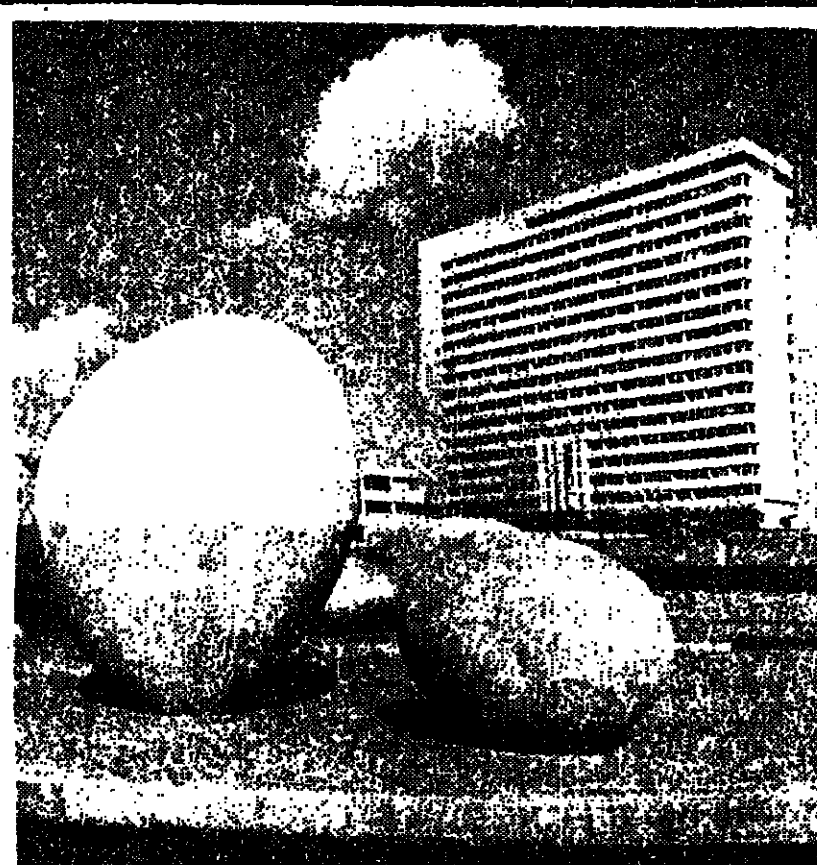
In 1976, Dr Ger Klein, the then Socialist State Secretary for Higher Education, advocated the long-term abolition of the distinction between the colleges and the universities in a government Bill which was approved by Parliament.

This was to be accomplished by upgrading and amalgamating the 350 colleges to form institutions rather similar to the British polytechnics. These would then work in close association with the universities and would enjoy parity of resource allocation and esteem.

University courses would be shortened to four or five years, while still retaining a research component for all students.

The aim was an eventual comprehensive system of higher education, in which distinctions between institutions would be replaced by differences between courses.

Today, the right-wing Dr Pais, in his recent policy document, *Mass Higher Education*, has gone even further by arguing that the



The Economic University, Rotterdam.

universities must alter their courses in such a way to make them much more compatible to those of the colleges up to first-degree level. He emphasizes that for many jobs now taken by graduates the research training is not needed.

A form of selection by examination for two-thirds of university applicants as well as the retention of the lottery for one-third would be introduced. Examinations at the end of the first year would decide who would go on for a further three years of university and who would go to the courses provided by the

vocational colleges.

Training for research, university and higher secondary teaching and the medical professions would be restricted to the most successful 40 per cent who would do two years' extra studies after the examinations ending the initial four-year degree study.

The crucial question now facing the Dutch tertiary system is whether, in the face of fierce opposition from dons and students, the government has the will to translate these reforms from rhetoric to reality.

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Curriculum 'think tank' likely to have wings clipped

John Richardson on the future of one of Holland's most controversial educational planning bodies

A budget-imposed slowdown on the recruitment of staff has halted two years of rapid growth by the new Dutch Curriculum Planning Foundation (SLO). But Dr Bob Wildeboer, director of the foundation, is convinced that 1978—a year in which no fresh projects can be started and no permanent personnel appointed—marks only a temporary pause in the development of this young education service organization.

The SLO was founded in January 1975 in response to a growing demand for all kinds of back-up services and advice on curriculum planning from schools, colleges, local and national education organizations and the Ministry of Education itself.

At the beginning of 1976 the staff of the SLO comprised the newly appointed director and a temporary secretary. By September a deputy secretary had been recruited with two educational scientists plus secretarial assistance. In May 1977 more than 30 people were in service, another 30 recruited and due to start work within a couple of months and 50 more staff associated with the existing subject-based commissions for the modernization of learning plans were being brought together under the SLO umbrella.

That number has today increased to over 130. The growing pains accompanying this rapid expansion were not eased by the government's insistence on the foundation moving from centrally-placed Zeist to Enschede in the far east of the Netherlands.

From the outset the SLO philosophy has been directed towards an openness of response to perceived needs as expressed in the requests of its clients. The brief has been to develop projects in cooperation with teachers and administrators within a framework which respects the heterogeneous nature of Dutch education, with its state schools and state-supported Protestant and Catholic systems.

Despite this ideal, however, strong fears have been expressed by the country's powerful denominational groups that the setting up of the SLO represents a move towards centralized policy-making and "takeover" of curriculum content and thus threatens the continued existence of jealously guarded autonomous approaches to learning.

It was no accident that the SLO was born during the period that Dr Jos van Kemenade, the innovative Socialist sociologist, was Minister of Education.

Importantly, he envisaged the SLO as being one of the key enabling devices to put into effect his overall restructuring plans for the Dutch education system.

It is significant, however, to note that the SLO in a major policy document published last year emphasized that it intended to stay independent of any one social, religious or political standpoint.

One of the strategies adopted to ensure that independence of view remains a reality has been the inclusion of many diverse interest groups within the governing council. Dr A. M. P. Knoppers, a professor at Nijmegen University, is the chairman, the Ministry of Education and Agriculture have one seat each, four observers represent the Inspectorate, and seven places are reserved for representatives of subject-based curriculum advice commissions. Twenty members are drawn from organizations such as the Catholic Schools Council, the Protestant Schools Council, the State Schools Council and the Association of Local Authorities which together make up the Central Commission for Education.

The day-to-day policy responsibility for the foundation is in the hands of a committee of seven drawn from the broader governing body. It is made up of the chairman, one representative of the Ministry of Education, one from the curriculum advice commissions and four from the central commission.

Dr Wildeboer, who serves as the executive secretary to the governing council, is well aware of the difficulties the forced British Schools Council in negotiating a way through the minefields of sectoral interests found in education and its linked economic, social and political systems in pluralistic societies.

But he remains confident that will be possible to steer a path which avoids the dangers of domination by one power group, the Ministry or teacher's organizations. The Great Debate since by Dr van Kemenade has indicated some avenues for large-scale curriculum change. One example of much consensus has developed by linking the infant and primary schools to form a common system for all between the ages of 12 years.

The foundation was not, of course, set up in a vacuum. Other agencies providing curriculum development services to the education system had long been at work. SLO's relationship with these bodies is vital for its success in encouraging innovation within a pluriform educational system which reflects Dutch society as a whole. Some 20 subject-based commissions for the modernization of learning plans (CMLs), which were mostly in the western parts of Holland, have been brought together at the SLO at Enschede and renamed advice commissions (ACOs).

They have an independent advisory role, guiding the Ministry, the governing body of the SLO, all matters relating to development in a particular school subject as a modern language, or a new field such as health education. The three national pedagogical centres situated at Assen, Hoesvelaken and Hertogenbosch, the Central Institute for the development of Testing Procedures (CITO) are, however, autonomous.

At the Ministry's request the SLO is currently busy helping with experiments in the new 4-2-6-4 comprehensive middle school and a broad restructuring of domestic science education and training for industrial occupations.

At a more specialized level it is concerned with modernizing better equipment in the new lower schools.

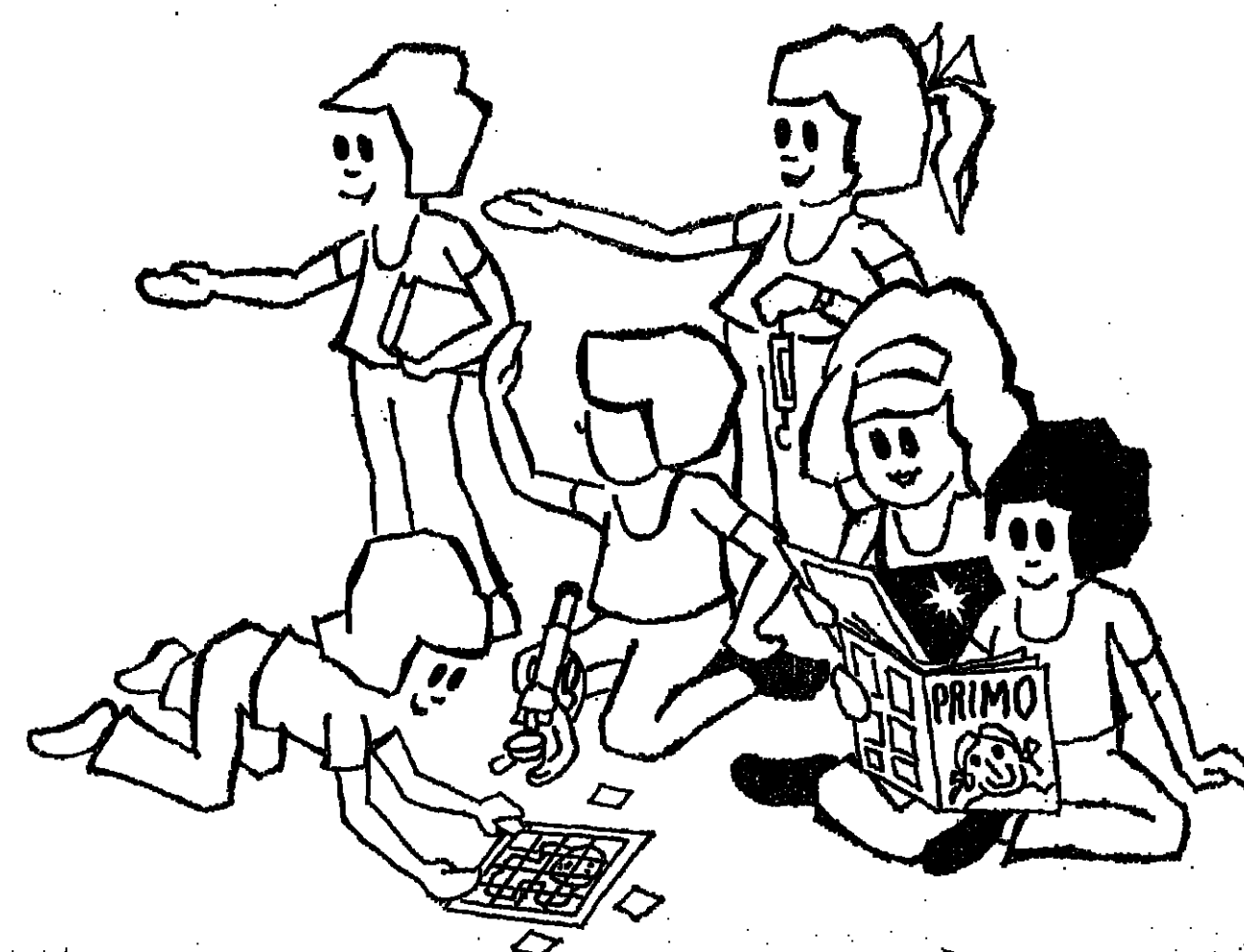
The foundation's ability to meet more of the plea for help that is coming to its door will depend largely on its success in budget negotiations with the Ministry, and the working relationship it builds up with other agencies that are concerned in curriculum development.

The immediate financial picture is not rosy. The new government, under strong pressure from disorganizational organizations, has expressed itself in favour of "giving back power to the teachers" and the working relationship with the other agencies that are concerned in curriculum development.

Its educational manifesto, published in December, is unambiguously perhaps the best of centralized, innovative bodies which Dr van Kemenade had established when the Socialist administration fell, that "in the matter of education, advisory services, the government takes the view that schools should have their own responsibilities and the freedom to make their own arrangements. Support and regulations pertaining to the preparation and consultation will be concerned."

Meanwhile, the SLO plans that it has more than 150 projects for curriculum planning which are waiting attention; and that it has 40 projects at a time which would be innovative in school having to be told that they will have to wait at least two years before they can be assisted.

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Here today, here tomorrow

The EEC's estimated 12m migrants are a problem common to most of the Community. Largely imported during the booming 60s from such countries as Turkey, Yugoslavia and Spain, the migrants came to be looked on almost as a floating tenth member of the Nine.

Now, with the recession, the "guest workers" are no longer as welcome. Some countries are offering them lump-sum payments to those willing to go back home. Where legally possible, work permits are not being renewed. Certainly the flow of new workers into most of the Nine is drying up.

But for many it is better to stay unemployed where they are than go back home and be unemployed—without the generous welfare benefits they often qualify for in the host country.

So they are not going away: the floating tenth member is still there, though now more often than not submerged in the dismal urban ghettos of Frankfurt and Amsterdam and Paris.

problems for Dutch planners. Last year, for example, only 3 per cent of the country's migrants went back home, and over recent years the growth rate of Turkish children entering the country has been around 15 per cent a year.

In the past 25 years, too, 400,000 more immigrants have come into the country than emigrants have left. Most of the 200,000 who left were Dutch while most of the 600,000 who arrived were from the Third World.

Ninety-five per cent of Rotterdam's schools have non-Dutch speaking pupils. PAUL MOORMAN on Holland's migrant families

It is figures like this that many officials concerned with migrant questions have been pointing out increasingly urgently to the government. They are insisting that official government policy that migrants are only temporary is simply not true.

Already the Moluccan violence has caused deep consternation in this typically most unviolent of European nations; and although there are uniquely special reasons for the Moluccan unrest, there are fears that precedents are being set for other Moluccans whose violence would not be motivated, as has been the case so far, by a kind of desperate idealism.

One of the problems is that unemployment pay and welfare benefits are so high and so comprehensive in Holland that it is probably the best place in Europe to be unemployed. The result is that the out-of-work simply stay put.

Bicultural education is now emerging as official Dutch policy to most groups of migrant workers' children, but the difficulties faced are formidable.

Almost all the Turks, for example, come from unskilled manual workers' homes. They are, therefore, poorly equipped to tackle learning in one language, let alone two.

They enter Dutch schools one class lower than they would if they were in Turkey and they are given perhaps one hour a day of Turkish language and culture and some remedial teaching in Dutch.

It means, of course, that their families have to be heavily disrupted and that, realistically, the most that can be hoped for is that

they will pick up the rudiments for survival in urban society in both Holland and, if they return home, Turkey.

One of the main concentrations of Turkish and Moroccan migrants is in the Eindhoven area. In the extreme east of the country, there are 3,500 kindergartens and primary schools of guest workers in the district and in inner Eindhoven schools more than one in 10 pupils is foreign. Some experts say this figure could increase to 20 per cent over the next five years.

For the start of the next academic year two schools have been selected to carry out pilot projects. In one, there will be a class of six-year-old Dutch children and a class of six-year-old Moroccans; in the other, there will similarly be two separate classes—of Dutch and Turkish children.

The classes will be divided by a double-line middle. For half of the time the Dutch children will be taught by native teachers and for a quarter of the time they will learn with a Dutch teacher. For the remaining quarter the two alien classes will merge for such activities as art, singing and gymnastics.

At the end of two years this "bussing" experiment will end and the children will be returned to their neighbourhood schools. The hope is that they will then be much better prepared to integrate with Dutch classes and, at the same time, will be well ahead with their own language and culture studies.

But, significantly, little is being done to give Dutch children any formal teaching of the language of their foreign class mates.

That there is a real need for some such instruction is illustrated by the fact that government funds are being made available to allow adults living in predominantly Moluccan settled areas to learn Malay.

One unique institution in Eindhoven is having little truck with biculturalism. This is the so-called Spanish School which caters for more than 100 Spanish children from a radius of 25 kilometres.

The Spanish School unashamedly teaches only in Spanish in kindergarten and to the end of the first year. When the rudiments of reading and writing have been mastered in Spanish, Dutch is gradually introduced. By the age of 12, some 40 per cent of learning is in Spanish, and pupils transferring to Dutch secondary schools have to take a bridge year to



Migrant workers' children: EEC problem.

"acclimatize" themselves.

Officially, the state of finance such an institution, only one of its kind in the country for legal purposes, the "school" is simply part of an inner Eindhoven primary school.

Because the experiment seems a real need, the authorities have agreed to let the school turn a blind eye to the regulations.

They have mingling, however, there is, for instance, very little contact between the Dutch and Spanish sections of the school. The Dutch section, of course, contains some migrant children from other countries.

And they are afraid that long stay children will go on to Dutch society and may not be able to return home.

But Mr Joop Grootenboer, chairman of the school's governing body, is unrepentant. The government encourages the Spanish to return home with payments of 1,200 guilders (about £120) a year. "We are preparing children to return home. We are not taking them away from their parents. We are doing our best to help them."

Certainly, the government's policy of integration on the one hand and voluntary repatriation on the other are contradictory. A complete commitment to one way or the other is an important task of the government.

Dutch teacher unions

Where pay is so good there's time to think of the kids

by Paul Moorman

It is not every teacher union official who can say—and mean it—that "we do not want to get involved in a fight over pay and conditions because our main concern is to work for a better education system".

But that was the line taken by Mr Jan Huisman, president of the Dutch National Federation of Teachers' Unions, the umbrella body to which more than two-thirds of the country's 180,000 teachers belong.

Mr Huisman was reacting before the contents of the mystery package were announced by the new government last weekend.

The principal reason for the apparent high-minded disinterestedness of the federation is quite simply, that it can afford to be disinterested. Dutch teachers are among the highest paid and most feather-hedged in Europe.

Over the past 15 years they have climbed from way down the pay league table to a position well above the average salary of about 30,000 guilders a year (over £7,000 at today's exchange rates).

Preschool teachers can earn up to 40,000 guilders, primary teachers up to 50,000 guilders and second-year staff anything between 55,000 and 75,000 guilders.

Although the teacher unions follow the powerful industrial unions in their wage claims rather than trying to make the pace themselves, they have often managed to outstep them because most teacher salaries are also linked to the country's generous civil service scales and conditions.

Additionally, the teachers have the right to negotiate "anomalies" directly with the Ministry.

Teacher salaries began to really take off in the early 60s when, as in the rest of Europe, demand for teachers was high.

Now, with the falling birthrate—again, of course, common to most European countries—demand is slackening dramatically.

There are 25 per cent fewer school children in Holland now than in 1970. At pre-school level, a quarter of all primary teachers who once had a job are unemployed. And this year over half of the graduates of the teacher training colleges, which turn out primary school teachers, will not find jobs in teaching.

Large numbers of schools, particularly rural nurseries, are having to close their doors. The bleak situation in the primary sector will get relatively unaffected secondary schools by the mid-1980s.

One problem is that the government is not able, as other countries' governments are, to readily close down unneeded training colleges.

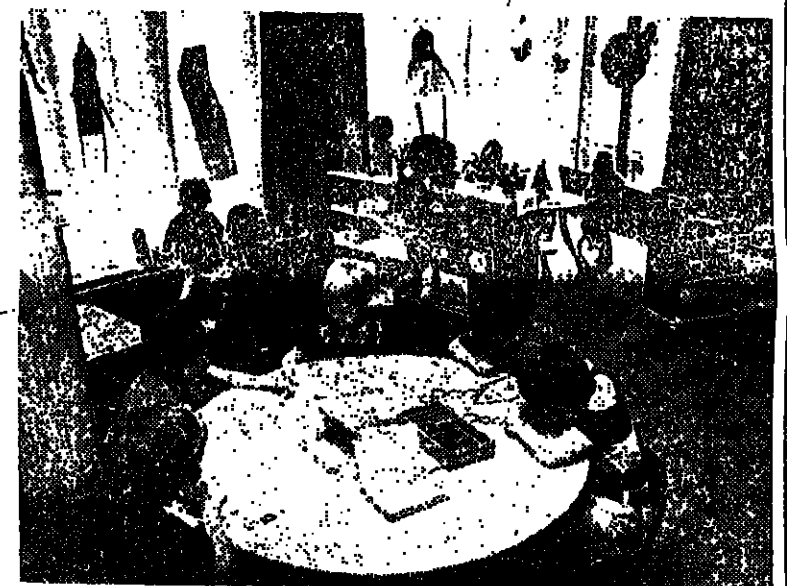
Most of these colleges are departmental and, such, fiercely autonomous. Although funded through the central government, they attempt to close them would require discrimination be seen as a discriminatory interference. And potentially disastrous politically.

There are now distinct signs, however, that many public teachers are voting with their feet. At some colleges this year, 40 per cent of the trainees appear to be thinking that it is better to start working unemployment pay as soon as they leave school rather than delay for the four years plus of college courses.

After years of the rapidly worsening job situation brought by the falling birthrate, they know, too, that it is government policy for head of the queue in the wait for a job.

For its part, the government has acknowledged the problem in the primary schools. It announced in the end of last year that it would be "paying the highest priority" to this sector.

It is going ahead with the amalgamation of nursery and primary schools, begun by the previous Labour government, and hopes that this will create more jobs available at the same time it is looking to create more posts by lowering primary class sizes, at present



around 31, in the autumn.

Two main reasons exist why teachers are not so worried about these alarming developments as they might otherwise be. The first is that most just do not believe in the unemployment and salary pegging which is going to hit them.

As Mr Huisman says: "After such a long period of prosperity, our members are finding it difficult to understand that lean times are coming in the next decade. It is going to be a major task preparing them for the full extent of the unemployment and salary pegging which is going to hit them."

Even those who have seen the writing on the wall can afford to be relatively unconcerned financially. A redundant teacher of around 30 is on full pay for three months, 90 per cent pay for the following nine months and 80 per cent for the four years after that.

More years of service further cushion the blow so that most teachers of around 50 made redundant qualify for 80 per cent salary for the rest of their "working" life. Retirement at 65 is normally on 70 per cent of final pay.

Union officials themselves are not so complacent. To stave off joblessness they have even offered to negotiate lower starting salaries for new teachers, but this has been refused. It has been calculated that a 1 per cent cut would reduce 200m guilders a year, which could mean more than 4,000 pre-school posts.

This spirit of compromise, albeit based on enlightened self-interest, extends from dealings with the government to the national federation itself.

The federation consists of three large unions—representing Catholic, Protestant and "neutral" and state schools—teachers together with a handful of small specialist subject groupings.

The chairmanship of the federation rotates between the general secretaries of the three unions on a two-yearly basis. With all three unions having memberships crossing the whole spectrum of political opinion, policy discussions are often prolonged and heated.

But the federation backed the controversial plans of the previous government, for comprehensive "middle schools" for the 12 to 16-year-olds—or, at the least, alternative plans for three or four bridge or orientation years before upper secondary choices had to be made.

It is strongly felt, according to Mr Huisman, that comprehensive is the way forward, but that they can only be made to work "if pupils have been taught to think creatively at primary level and can therefore work on their own level in the comprehensive".

For this reason, the decision to go ahead with implementing the new four to 12 schools for all—with emphasis being laid on producing the "total child"—has been warmly welcomed by the federation.

One group of teachers is not included in the federation. This is the 17,000 strong Dutch Society of Teachers, whose members are preoccupied with more jobs available at their own level in the comprehensive schools, at present

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Resources industry in Holland

Books still seen as best buy

by Frances Farrer

It is perhaps not surprising that the balance between books and media in Dutch classrooms is firmly weighted towards books. Leaving aside the high quality of Dutch printing and the relative novelty of audio-visual and other media, Holland's impending economic difficulties are inevitably reducing the possibilities for innovation.

Other suggested reasons for book supremacy are that books demand less preparation time and that they are more suitable for individual teaching than films or soundtracks. In this context the word "freedom" is very much used: "Dutch teachers don't like to be told what to do, audio-visual materials are less adaptable."

Nevertheless, there is an audio-visual industry in Holland, made up mostly of small firms adapting imported software or distributing imported hardware, and the government funds the Nederlandse Audio-Visuele Instelling (NAVI) which is concerned mainly with films.

Among the areas that book publishers are concentrating on is primary teaching, since primary and nursery schools are soon to merge, bringing the four to 12 age group together in a new basic school. Wolters-Noordhoff are researching an integrated primary maths scheme, Meulenberg have a range of books and educational comics which are intended to be used at home as well as in class. Their Pole Star series divides biology as stories and provides extra information for parents. Some books can be taken to pieces to be used as pictures, puzzles or wallcharts—possibly a dangerous precedent.

The standard of graphics and design is often impressive, though unfamiliar to readers outside Holland. This can cause difficulties for international sales. Several publishers think that the quality of their books is simply too high for other countries, though some realize that even their cartoon figures can be unappealing abroad, especially to younger children. Meulenberg's conservation newspaper, which was produced for nine-year-olds upwards, may be adapted for Britain, for example. If it is, the company thinks the cartoon children will almost certainly have to be redrawn.

Books have tended to travel in the opposite direction, with many



In "Ogen, Oren en de rest", published by Meulenhoff, the senses are examined through simple text and illustrations. The bear demonstrates taste.

adaptations of English and Scandinavian series. This still happens but there are now more exports from Holland. Wolters-Noordhoff took the English 900 course from Cassell and Collier Macmillan, developed it for Dutch classrooms and are now selling back their developments.

The general feeling is that publishers should co-produce from the very beginning rather than try to adapt existing courses. Meulenhoff have taken an Oxford University Press maths course in manuscript form and say that British publishers who used to be reluctant to adapt now offer to cooperate from the earliest stages.

Meanwhile, one organization, Internat, imports English language teaching materials direct from British publishers—among whom are Oxford University Press, Cambridge University Press, Hodder and Stoughton and Evans Brothers.

Educabook publish mainly technical and scientific books and are experimenting with adult material, especially language. They have long experience of adapting technical manuals for developing countries where sometimes people cannot even interpret simple diagrams.

The company has recently produced a welding manual for Arab use, drivers who are suddenly needed to work on pipelines and may be as suddenly have to return to civil driving.

The NAVI are introducing 12 new 60 and 70 items of software this year. They re-edit programs from West Germany, England, Canada and about 30 other countries, now including Japan, putting separate commentaries in their own language.

This year the emphasis is on many programs. Fashionable topics in recent years have been environmental studies, energy and cities.

Since the NAVI is financed half by the government and half through sales or hirings it could be expected to be unadventurous. In fact its most fruitful output is in its work with progressive teachers, they admit, their output has pleased the majority, and the board, which represents about 10 educational institutions, can do them from doing things that are too unusual.

At Rotterdam the Institute is a centre where they exhibit hardware and software and run courses on how to use them. But during six years since the centre was opened there has been a slight decline in the number of people using it.

Companies involved with equipment other than audio-visual school furniture, equipment for science, games and crafts—let us import rather than manufacture. The Federatie van Nederlandse Schoolleveranciers (FNSL), an association of six equipment suppliers, say that there has been little import, rather than manufacture.

Overall, the impression is of reasonably healthy publishing and equipment industry that is interested in language and is interested in export mainly because the school population in Holland is shrinking. Publishers are aware that adapting and translating published materials no longer seems to work.

Despite official recognition as Holland's second language, Frisian still has its problems

Friesland's tongue troubles

It is a bit of a culture shock to go to Strasbourg for the first time, pick up one of the city's German-language newspapers and read a story which begins "Unser Präsident".

The "our President" who is being referred to is, of course, Giscard d'Estaing of France and not Walter Schell of West Germany.

This is one clear illustration of how today's modern European union states while they may give the impression of political and economic homogeneity, continue to vary enormously as far as language and culture are concerned within their borders.

Surprising as it may seem at first, there are only two monolingual countries in Europe: Iceland and Portugal.

In Holland the language issue is centred on Frisian, the area in the north which covers 10 per cent of the total surface of the country and with over half a million inhabitants, accounts for 4 per cent of the population.

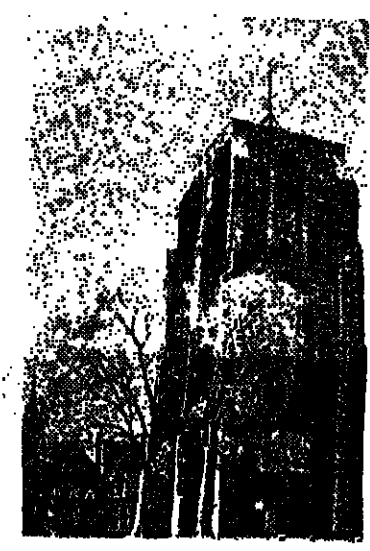
Frisian is a west Germanic tongue related to Anglo-Saxon and ancient Frisia Magna once stretched far northwards along the North Sea coast.

For today's Frisians are not empire-builders. They want to remain an integral part of Holland, though at the same time they want cultural and linguistic independence. The main battles over the past quarter of a century have been fought around the schools.

Research figures show that spoken Frisian is alive and very well: 87 per cent of the population can understand it; 83 per cent can speak it and, significantly, nearly three out of four do so regularly at home.

Outside the home, however, well under half would normally speak Frisian to the doctor or bank manager or other "prominent citizen"; and only 69 per cent can read it reasonably well.

Frisian language enthusiasts admit that the ability to write Frisian is not good: only one in five can write it well and further 20 per cent can write with difficulty.



Learning tower in the ancient town of Leeuwarden, the Frisian capital

Most telling, perhaps, is that of the one in three who do have this written command of the language, only one in 50 actually needs it at work.

Frisian is accepted in the courts and in the early 1950s the first experimental bilingual schools were set up.

There are currently 570 primary schools in Frisianland and over 70 of them are bilingual. Pupils in the bilingual schools start at the age of six and for the first two years virtually all their work, spoken and written, is in Frisian. They learn to read in Frisian.

From the third year till they transfer at 12 to secondary school an increasing number of lessons are taught in Dutch—which the children "pick up" anyway from television and radio and the whole environment—while a strong Frisian component is retained.

Of the non-bilingual schools at least half teach Frisian as a subject and by 1980 all primary schools in the province will be obliged by law to give instruction in Frisian.

The Hague is also now considering a request from the provincial government for Frisian to be made compulsory at secondary level. The

request is expected to be approved. Already Frisian can be used in secondary exam papers, though very few pupils do, in fact, take advantage of this.

One drawback in the spread of obligatory Frisian in the primary sector is that from now on all teachers wanting to work in Frisianland will have to pass a proficiency exam in the language.

At a time of rising teacher unemployment in primary schools this possible constraint on mobility will come as an added difficulty.

Meanwhile, to tie in with the general introduction of Frisian, the spelling of the language is being simplified. With Frisian containing many diaphanisms and even triphthongs, spelling is far from easy—another reason why so few people write it.

School textbooks are being changed to the new spelling, though the alterations have been such that literature and poetry will be able to be understood without the words needing to be respelled.

Much of the work is being co-ordinated by the Fryske Akademy, the institute in Leeuwarden for the study of everything to do with Frisian.

When the academy was set up in 1938 it consisted of one academic and a secretary. Today it employs 15 academics and 10 administrators full-time.

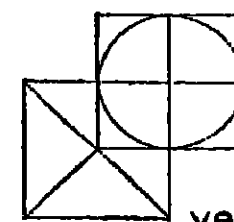
Last year the academy had a budget of about £500,000; half came from the central government, a quarter from the provincial government and the other quarter from private subscriptions.

It is currently working on a Frisian dictionary and the collecting of folk tales; it has sponsored a teacher training college and runs an effective educational advice bureau and teacher counselling service.

The basis of Frisian cultural independence, the academy represents the province's hopes for a University of Leeuwarden to replace the University of Franeker which, under Napoleon, at present Frisian studies not done in the academy are farmed out around the country's campuses; not an ideal situation.

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John Richardson on the secret of Holland's soccer success

Best feet forward

Holland's footballers, runners-up in the World Cup for the second time in successive tournaments, are, surprisingly perhaps, the product of a system which is little influenced by schools, colleges or universities.

With some 1.3m people, the Netherlands have over 1m club players registered with the Royal Dutch Football Association—the highest proportion of active footballers to national population of any country in the world, with even the tiniest village having a club, good facilities and a qualified trainer/coach.

All clubs were "amateur" until 1954. In the past 24 years such new professional clubs as Ajax, of Amsterdam, Feyenoord, of Rotterdam, FC Twente, of Enschede, and PSV (the Philips Works sports club), of Eindhoven, have become European household names.

Yet even today, in the Dutch first division, most players are part-time professionals with "day jobs" outside of the clubhouse walls of top sport.

There is little provision for or pressure on young footballers from highly organized competitive sport in the normal educational system.

Dutch secondary schools are legally obliged to provide two 50-minute lessons a week to cover physical exercise of all kinds including gymnastics (tennis, indoor games, football in Dutch game resembling netball), handball, football and field hockey.

Last September, at the beginning of the Dutch football season, out of 1,033,200 weekly lessons at all levels given in Dutch secondary schools, 20,627 were for physical exercise of which football made up only a small part.

Few schools do more than provide the statutory minimum. There is no league of dedicated schoolmasters giving up their free time to supervise lunchtime and after-school coaching sessions, or to organize weekly inter-house, inter-class, and inter-school league and cup competitions.

What inter-school football there is takes place over a 10-day period in the school vacations once a year, in what is very much a holiday atmosphere. Schoolboys who wish to take part in regular competition join the local clubs, where the coaching is based more on skills, tactics, and strategy than fitness.

Top manager, Ton van Dillen, of Twente, for example, said that the importance of coaching at all club levels, and the development of the footballing success of the last 15 years had little directly to do with formal schooling. He emphasized the right temperament and attitude.

The present comprehensive national coaching system evolved in the early 1950s. Five different diplomas can be earned by trainer/coaches. The lowest three grades are taught administered and examined by 20 coaching regions. For those who have the talent and the will to proceed to the two highest grades, national courses and examinations are arranged. Every schoolboy keen enough to join a club is taught by a qualified coach.

It was only after the Dutch were beaten by the West Germans in the 1974 World Cup final that a special youth plan was introduced with hope of encouraging long-term success.

Even now there is a great lack of pressure on schoolboys. Part-



World Cup star John Richardson

time professional and a regular even casual form of league competition which emphasizes skills and intelligence rather than brute strength contribute to the all-round development of the Dutch schoolboy.

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Four ways for all to school

At all levels of compulsory education in Holland there are Catholic, Protestant, "neutral" and state schools. The central government finances the non-state sector virtually 100 per cent.

Primary education lasts from six until 12, although over 80 per cent of four and five-year-olds attend nursery schools.

Plans are now going ahead to amalgamate nursery and primary schools into new basic schools for four to 12-year-olds. It is hoped the process will be completed before the mid-1980s.

Pupils transfer at 12 plus to one of four kinds of secondary school, the choice where is determined by local assessments, parental wishes and sometimes aptitude tests.

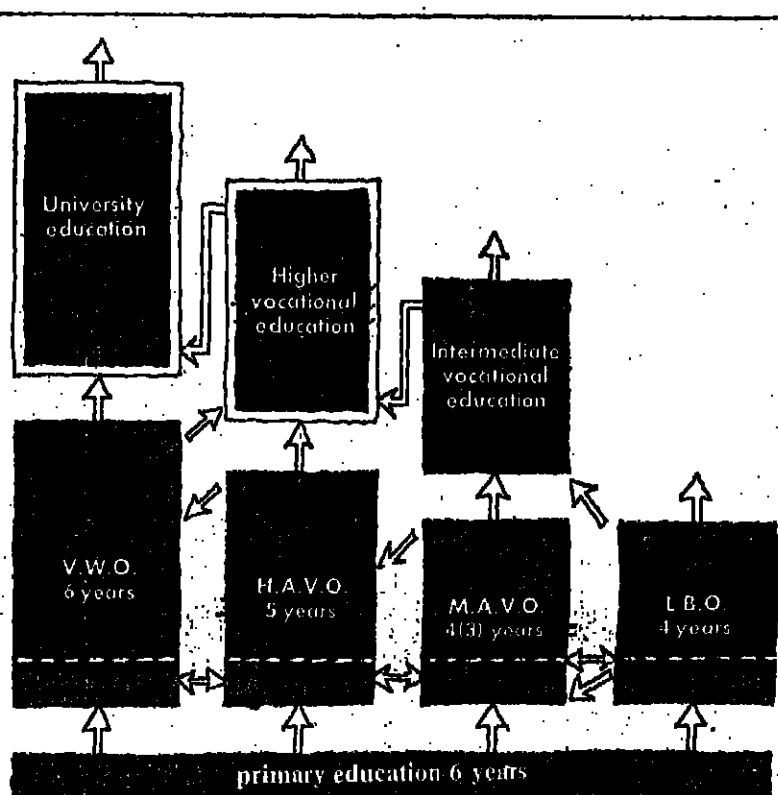
Wide possibilities exist to transfer from one type of secondary school to another if pupils develop differently from expected at 12. Choices are common. And some secondary schools contain four secondary types of education.

The four types of secondary school are:

• VWO, six-year academic schools leading to diploma enabling pupils to go on to university. Attendance concentrates on "modern" languages and gymnastics on classical.

• HAVO, five-year higher level general secondary schools whose final exams give pupils access to higher vocational institutions such as teacher training colleges, colleges of education, agricultural and medical general secondary schools leading to intermediate vocational education.

• LBO, four-year lower vocational



schools leading to no further qualifications.

Under the Socialist-led coalition which fell last year plans were being developed for comprehensive "middle schools" for all 12-16 year olds. These were to have been followed by academic or higher vocational upper secondary schools. The school leaving age was to have been raised to 18 by the mid-1980s.

The new Christian Democrat-Liberal (right-wing) coalition is keeping a small number of middle school experiments going but has emphasized the long-term nature of any possible restructuring of secondary education.

Higher education is dominated by the country's 13 universities and

technical high schools. There is no difference between the two in levels of studies taught. Under Dutch law a "university" has to comprise at least three faculties, including one of medicine or mathematics and natural sciences. Only pupils who have taken the VWO exams are eligible to enter.

There is nothing comparable in Holland to Britain's polytechnic system. Higher level vocational institutions (HBOs) take pupils after five years of HAVO education, Courses at HBOs last between three and five years.

Intermediate level vocational institutions, with courses lasting three or four years, take pupils from the MAVO schools.

Dutch treats

by Patricia Sasne

Rvedale School is an 11 to 16 comprehensive of about 500 pupils in rural North Yorkshire. French and German are taught and there is a European studies course in the second and third years for pupils of a wide range of ability. Those wishing to go abroad for language practice are very well catered for by the Yorkshire Exchange Committee and the Anglo-Austrian Society.

Such opportunities are ideal for pupils who can cope with three weeks in a foreign country but are not suitable for younger children who may also be nervous about the language. Moreover, many families cannot afford a school holiday trip. So we looked for an inexpensive way of getting children abroad for a few days, giving them the support of a group, as well as individual contact with private families. The country should be easy to reach and the food should not be too startlingly different from our own. The chosen place should form part of our geography syllabus and be a member of the Common Market. The Netherlands was an obvious choice.

The Central Bureau for Educational Visits and Exchanges put us in touch with the Morgenstern

Mavo School on the outskirts of The Hague. It is a school very similar to ours in style, but has only 300 pupils.

The experience gained from the first group visit in 1976 has enabled us to improve later arrangements. We have chosen early October as our exchange period as ferry rates are cheaper, the weather is usually good and many attractions are still open. The group arrives on a Wednesday morning and leaves on the following Monday.

On our last visit we spent some of the time on geography projects for which work sheets had been prepared beforehand. For the

folders we went to the new town of Lelystad where we were impressed by the thick planting of shrubs and screening plants which make new buildings in Holland so much less raw. Nearby we visited the Fokker exhibition and information centre where drainage and land reclamation are explained very clearly. We were shown two films in English on the story of dyke building.

We visited Rotterdam and toured the docks by boat, seeing ship-building and repair and the large container port. We also visited the extensive demonstration farm at

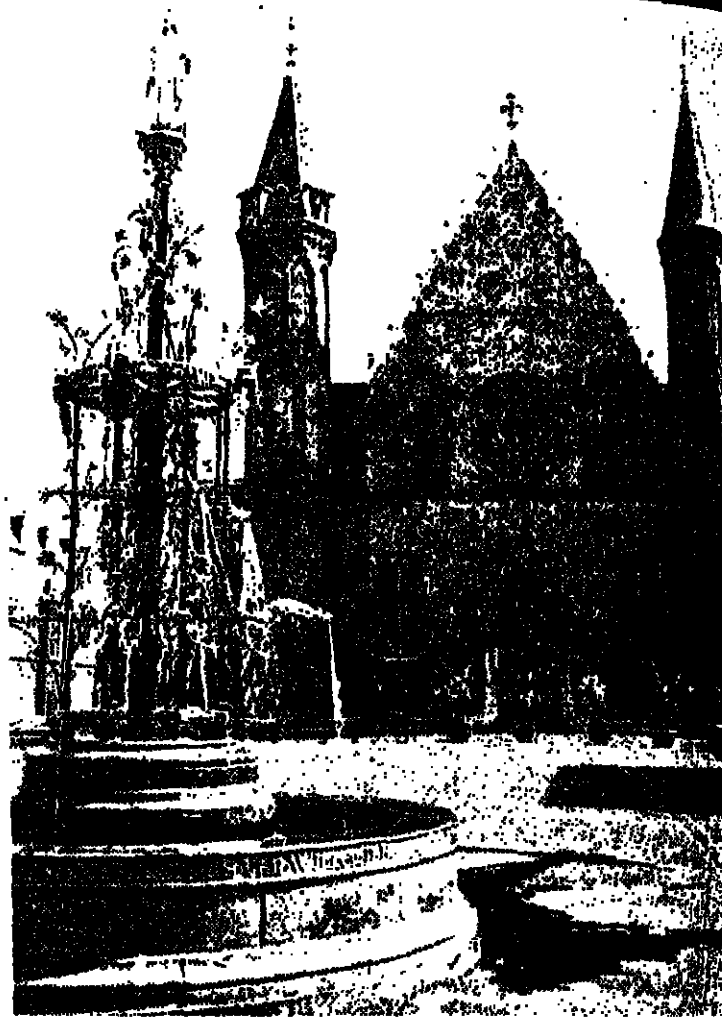
Flevohof which was of particular interest to many of our pupils with their farming background. Here they were handicapped by the lack of captions in English, though the exhibits are well laid out and there are many working models.

Next time we intend to draft work sheets on certain aspects of the display—milk and root crops, perhaps—which pupils can then concentrate on. Everyone enjoyed looking at the live stock and seeing the various methods of housing and feeding. There is a covered walkway which leads the visitor through the display, making it a good place to visit even on a wet day. The complex includes a restaurant, cafes and small shops.

Other excursions included the miniature village of Madurodam and the Binnenhof in The Hague where we had a slide show in English and visited the Parliament's debating chamber.

We went to a flower auction at a growers' cooperative. Even the boys were impressed enough by the breathtaking array of flowers to buy bouquets on their last day to take home. Our Dutch partners joined us for a trip on the Amsterdam canals and to Volendam.

As each day was carefully planned to interest and occupy everyone we found the whole exercise much less exhausting than the usual school visit. We took 42 pupils with three staff and the major effort was the detailed preparation beforehand. The cost to each child was £35, which included everything except passport and pocket money.



The Knights' Hall in the Binnenhof, The Hague, seat of the Dutch parliament.

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John Grefton on a serious rival to Donald Duck

Comic view of the Third World

The mostly widely read comic in Holland is published by the information department of a government ministry. Called *Sam-Sam*, it is understood by half a million Dutch children—100,000 more than those who buy its nearest rival, *Donald Duck*. But, unlike traditional comics, it tends to be read by the whole family; and it is also used as resource material in schools.

Also, unlike other comics, it is free, though children have to put themselves on a subscription list to get the 10 issues a year. Moreover, it has an openly political and moral purpose: to raise the consciousness of Dutch children about the Third World.

The 1.5m guilders (nearly £400,000) which it costs to produce represents 0.005 per cent of the Ministry of Overseas Development's total aid budget, which is itself higher, in relation to gross national product, than any other European country's except Sweden.

Aimed at primary school children, every issue contains a colour spread poster and all articles are amply illustrated with photographs and drawings. There are two serials, one of which tells the story of Bart, a Dutch boy who finds himself travelling all over the Third World, while the other is about a Moroccan girl, Farida, the daughter

of a "guestworker" in Holland. Farida, though, is now being replaced by an Indian girl in Peru. The first issue appeared in January 1975, when 30 copies were sent to 8,000 or so primary schools. The children didn't have to buy it, but merely fill in an order form. After that, the schools were not involved; copies were sent direct to subscribers' homes. Circulation quickly rose to over 300,000, and a similar exercise with the primary schools this year—based, with the cooperation of the Ministry of Education, on a more complete list—produced another 170,000 orders.

The original initiative came from Bob van Opseeland, a former journalist working in the Ministry's information department, and Dody Dony, a freelance designer. For van Opseeland, the main object was simply to help win acceptance for the money—1 per cent of GNP—that his department spends. Dody Dony's main interest was in designing something with popular appeal that could still get an unpopular message across.

Eighteen months ago the team decided to launch an adult version. Called *Troef* (Trump), it was aimed at the women's magazine market, and, unlike *Sam-Sam*, appeared every two months on the bookshelves. True to the proselytising image of its editors, *Troef* has carried

articles on the opium trade in the land and on who profits from it. It has also covered the price of oil, alongside more sober topics like employment and development policy. Selling at the equivalent of 20p a copy, it was hoped that it could become self-supporting; in fact, it is still heavily subsidised.

Most of its 20,000 readers are in the 18 to 35 age group. Clearly, the young Dutch citizen of today, and the *Sam-Sam* readers who are citizens of tomorrow, both want to know, and are being told, a lot more than their equivalents in other countries about the relations between richer and poorer nations.

Van Opseeland and Dody Dony believe that you can get people to read anything—about their own or road anything—high in Holland, employment, high in Holland, elsewhere, about the sexual abuses of a man seeking a job in black Africa, about drugs—*Troef* is packed right, with facts, stories and recipes. Lots of photographs, too; that way, they say, the text can be understood without needing the message.

The formula seems to work. Perhaps the Dutch feel especially guilty about their colonial past; perhaps they are genuinely interested in the Third World, or perhaps their money is being spent on their behalf. But probably the real explanation lies in their intense nationalism—the same combination of hard work and good works that helps the Afrikaner culture. As van Opseeland puts it in Holland, the Catholics are Calvinists.

Sam-Sam and *Troef* have survived a change of government. The new Conservative Minister, Jan de Jongh, has even allowed *Troef* to start advertising. He has also allowed it to move out of government offices to fringe body, the Tropical Institute in Amsterdam, which, like the Institute for Tropical Medicine and Hygiene, includes the functions of museum and research institute.

The whole exercise springs partly from a commitment to aid as well as from the basic democratic notion that people have the right to know how and why their money is being spent. In the time of Minister de Jongh, the then Minister for Development Aid, Mr. J. P. van der Stoep, told me that, in concentrating on the previous decade, we students of intellectuals, we have forgotten the children, the housewives, the workers, the teachers, the people. Then, *Sam-Sam* and *Troef* fill the gap.

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Youth unemployment

Fewer jobs for the boys

Like almost all other western industrialized nations, Holland has been suffering badly in the past four years from rising unemployment. And, again as in other countries, it is young people who are bearing the brunt.

Officially, Holland has a jobless rate of just over 5 per cent, with a total of 200,000 out of work. Depending on whether part-time and "social projects" employment are counted, joblessness among the under 25s ranges from 60,000 to 100,000 of this total.

In the 16-18 age bracket unemployment is nearly 10 per cent. Between 19 and 23 it falls to about 7 per cent. Of last summer's 220,000 school leavers some 11,000 still had not found a job in May.

It is hoped that the austerity package now announced by the government will not make these figures worse. Most of the cuts are in welfare allowances and public services (including public sector jobs such as postmen and bus drivers).

Government reasoning is that the cuts will help remove the need to tax industry more heavily and that more capital will therefore be available for investment and jobs.

Meanwhile, a variety of schemes to aid the young—most of them similar to those operating in other European countries—are in existence.

Under one such scheme jobless school leavers are invited back to schools for flexible courses lasting anything between six weeks and a year and aimed at increasing their awareness of work possibilities.

During the courses, which are attached to 20 special technical schools throughout the country, students visit factories and get careers talks from industry. Unemployment pay is continued during the course.

Introduced in 1976, the scheme is allocated 3.5m guilders (about £800,000) a year by the government. It has not, however, proved especially popular.

Even more unpopular, particularly with employers, has been the long-standing scheme which was endorsed enthusiastically by the previous Labour administration whereby young people up to 18 with full-time jobs have to be released compulsorily for one day a week for further study.

Although obviously not an unemployment aid scheme as such, the



Assembly work: the young are finding skilled jobs hard to get.

thinking behind it is to upgrade qualifications of the young in work so as to make them more adaptable to the changing labour market.

Additionally, the aim has been to make these young people more civically aware. But such has been the flooding of the measure that it may be dropped.

Plans are now well advanced for the establishment of two-year full-time voluntary vocational training courses for 16-18 year olds with no qualifications.

The courses will be based on existing schools and will aim to bring the youngsters up to a level where they can be accepted for apprenticeships. The government has promised to allocate extra funds to the project, which, it is hoped, will get under way in August 1979.

Unlike last month's proposals in Britain by the Council for Local Education Authorities, the Dutch scheme will concentrate on those without qualifications who might otherwise have been expected to leave school at 16.

A main purpose of the scheme is to help industry by giving young people more relevant training, but it is admitted that it will also mask youth unemployment and at the same time create more jobs for teachers.

One long-standing measure, now in operation for five years, qualifies employers who take on apprentices for premiums. A total of 84m guilders a year is allocated to this scheme, which the government will pay up to half the wages of young people between 19

and 23 who are hired by firms working on the officially unemployed register.

Non-profit organizations such as libraries, health care institutions, museums and schools can also employ youngsters between 18 and 24 up to 18 months and have to government pay their wages.

Five hundred million guilders have been paid out in this way since the scheme's three years of existence. The jobs done may include rebuilding an office filling space between buildings or helping a people.

The scheme makes young people aware of the job possibilities in these "soft" sectors and, importantly, keeps them in the touch with permanent vacancies as they arise.

Contrary to some expectations the new government, in the job creation sphere at least, is trying at least as interventionist as its predecessor.

But the Dutch are only too aware that such measures only scratch the surface of the problem. As one official put it: "We can give the youngsters better qualifications but we can't give them jobs."

Meanwhile, unlike some countries, graduate unemployment is below the national average of 5 per cent. But when the falling tide rate, at present affecting the secondary level, where graduates teach, the picture could change dramatically.

Paul Morgan

Tradition of consensus politics

continued from page 43

any practical use, they must also be taught how to take decisions about things that affect them. In this way education has the possibility of changing society."

Today, much of that ambitious (over-ambitious some would say) programme lies in disarray. Last year, after an inconclusive general election and months of unsuccessful haggling for new coalition partners, the Labour-dominated administration resigned to be replaced by a Christian Democrat government back by the right-wing Liberals.

It is not only the impending cut-backs (Contours was never successfully publicly costed) which are likely to halt implementation of many of its provisions; even the Socialists agreed months ago that spending would have to be curbed.

It is mainly that the now administration feels that things had gone too far too fast. Dr van den Broek, Minister of Education, said in an interview that he saw the project as a very long-term one.

One casualty is certain to be the middle schools. Although a small number will be developed on an experimental basis, the majority of the schools will be closed. The schools will be replaced by a new type of school, the "polytechnic school", which will be a mixture of primary and secondary schools.

He argued, too, that the Government might see any future middle schools as a hindrance rather than a bridge of orientation institutions rather than new kinds of schools.

A 14-point pupils should continue to be supported in the school of their development and abilities. The curriculum development



Dr Arie Pels, Education Minister

Foundation—like Toppy, just growing and growing under the previous government—will now find its way through the new cabinet. It is unlikely that any additional resources will be made available to it in the foreseeable future.

Both these developments have been welcomed in established educational circles. Professor Gerard Brinkman, president of the powerful Netherlands Catholic Schools Council, for example, said he approved of the plans of the middle schools: "many schools here are class-bound by area in Holland, but I doubt if it will be the right vehicle."

He was worried that bright children would find themselves

underprepared when they come to the planned two-year upper secondary pre-university curriculum and that these schools were anyway not a good idea.

Professor Brinkman, an even more pleasant at the possibility of the new Critical Development Foundation, being downgraded, said it was tending to try to solve general solutions on very different types of school. He said the old bodies are confident that when the foundation in 1980 it will have a sphere of influence further reduced.

On the other hand, the movement is pressing ahead with the new 4-2 schools, for the new cent of four and five-year-olds already attend nursery schools, despite the difficulties associated with the falling school population and the need to build new schools because in many areas the different school systems of adjacent education authorities are simple and are being replaced by more primary schools.

Indeed, there are even plans to create more primary schools from this autumn and many primary schools will be replaced by new 4-2 schools. It is hoped that by 1985 schools will be fully operational. The plans to replace the 4-2 schools have been accepted by a school board in 1979, for the 18-year-olds who would want to leave vocational courses to do intensive school work.

Officials stress that close cooperation with industry and the labour market will be a major planning link between the two systems.

But it is also the admission that the means to help disguise youth unemployment

PRIMARY Scale 1 Posts continued from page 42

MENT COUNTY COUNCIL

EDUCATION DEPARTMENT
The following positions are available for application to the Education Department, Ment County Council, 100, High Road, Leyton, London E15 1JN. Closing date: 21st July 1978.

SEVENOAKS DIVISION

HEXHAMPTON C.P. INFANT SCHOOL
Primary School, Hexhampton, Kent. Applications for the post of Head Teacher should be sent to the Education Officer, Sevenoaks District Council, 100, High Road, Leyton, London E15 1JN. Closing date: 21st July 1978.

DIVISION

WORTH COUNTY PRIMARY SCHOOL
Head Teacher, 100, High Road, Leyton, London E15 1JN. Applications for the post of Head Teacher should be sent to the Education Officer, Worth County Council, 100, High Road, Leyton, London E15 1JN. Closing date: 21st July 1978.

CITY OF BALFOUR

EDUCATION DEPARTMENT
The following positions are available for application to the Education Department, City of Balfour, 100, High Road, Leyton, London E15 1JN. Closing date: 21st July 1978.

REDBRIDGE

EDUCATION DEPARTMENT
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WALTHAM FOREST

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Middle School Education

Headships

DORSET
TOWNHILL MIDDLE SCHOOL
Head Teacher, 100, High Road, Leyton, London E15 1JN. Applications for the post of Head Teacher should be sent to the Education Officer, Dorset County Council, 100, High Road, Leyton, London E15 1JN. Closing date: 21st July 1978.

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SALOP
COUNTY COUNCIL
THE LAGON CHILDE SCHOOL

all 10 to 16 comprehensive).
Scale 1. Required for Joint
School Certificate of Education
in SCIENCE/MATHEMATICS
(Nile for combined Science
in 1990 and Physics in 1991).
Level 1 with 3 Mathematics
mainly with years one, two
three.

Application forms and further
information from Head-
master, S.A.E.

SOLIHILL
HOUSING COMMITTEE
PARK HAN SCHOOL
Water Oort Road, Castle
Bromwich, Birmingham B36 9JH
Tel 0121 350 1111. Construction
1,350 in total, including 10
16mm.

SOLLHULL
EDUCATION COMMITTEE
WILMINGTON BRIDGESHOP GRIMSHAW
SCHOOL
Headmaster: Paul Crook, B.A.
This school, an R.G. all-ability
primary school which opened in
1971, is supervised by the

in the Sixth Form and are invited for the following MATHEMATICS, Science and English by Mr. J. C. Pender, Governor, The Archdeacon's School, Kew, Richmond, Surrey, TW9 1EP. Birmingham B37 6NY or the Headmaster at the school, 770 5383, for an appointment.

STAFFORDSHIRE EDUCATION COMMITTEE
SODASAL HIGH SCHOOL
Bursar and Head
Mr. V. W. Hampton
Inquired for September, 1978
as possible bursar
graduate
MATHEMATICS, Science and English
Particulars of MATHEMATICS, Science and English
tion. Write

STAFFORDSHIRE
EDUCATION AUTHORITY
FAIR OAK COMPREHENSIVE
SCHOOL
Barnstone Brook Road, Rugeley
Scale, Staffs. B78 1JH
MATICS required to work with
the Lower and Middle School.
A good salary and benefits
and returns to the Grade
(S.A.E.)

SUFFOLK
COUNTY COUNCIL
CHANNY HILL SCHOOL
Melford Way, Ipswich
Ipswich, Suffolk, IP1 1JH
Head Teacher: Mrs. A. J. G. G. G.
Recruited September 1978:
CHIEF (Scale 3) for MA
SCHOOL

[illegible][illegible]

Head Teacher: Dr. D. H. Black
Required for September:
 1. **Grade 8:** **SCIENCE** and **MATHEMATICS** in the Senior High Comprehensive School pupils 14 to 16 years of age. **Availability of work at this level in this post school.**
 2. **Letter of application and B.T.A.P. to Head Teacher as a condition.**

WILTSHIRE
DORCAN GC(001,
 St. Paul's Drive, Oattingham
 Swindon
Headmaster, Edward Wells, M.A.
Required for September: 4 **MATHEMATICS** and 4 **MATHEMATICS** in the Senior High Comprehensive School pupils 14 to 16 years of age. **Availability of work at this level in this post school.**
 2. **Letter of application and B.T.A.P. to Head Teacher as a condition.**

Applications immediately to
Headmaster quoting two references
and enclosing curriculum vitae
and testimonials on receipt
B.A.E. Vacancy due to promotion

Modern Languages

Heads of Department

BUCKINGHAMSHIRE
DEACONSFIELD/CHILTERN
DIVISION
WATKINS JUNIOR SCHOOL
Watkyn, Chesham HP8 1BA

[illegible]

**If you are
interested please ring
Mrs Annice Lightfoot
The Times Educa-
tional Supplement,
Gray's Inn Road,
London WC1X 8EZ.
Telephone:
01-837 1234**



SOLLHULL
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SCHOOL

Apply by letter in first instance giving curriculum vitae, references and names and addresses of five referees and enclosing S.A.E.

WEST SUSSEX

NORTH EASTERN AREA

THOMAS BENNETT SCHOOL
Avenue Drive, Telside,
Crawley, Sussex
MATHEMATICS SPECIALIST to teach in Upper School 16 to 19 of age boys and girls at comprehensive school. Full range of work available but special interests will be met on an ad hoc basis.
Housing allowance plus Local Fringe Area Allowance.
Application to Head Teacher willing, giving two referees.

WESTERN AREA
WENTZSLER REIS SCHOOL
Wentzsler, Leo, Registrar.
Summer 2021 DLH
(1,610 Mixed Comprehensive)
Headmaster: Leo Wentzsler
TEACHER OF MATHEMATICS - temporary
years' Physical Education for
to each B.M.P. Matriculation
to C.G.S. and to reveal
to third and fourth years and a
with Boys' Physical Educa-
throughout matriculation interests
Rugby and Basketball. Detailed
not essential.
to Headmaster of
details of age qualifications,
experience, together with names
attendance of two referees.

WELLSIDE
WELLSIDE HIGH SCHOOL

Head Teacher: Dr. D. H. Black
Required for September:
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[illegible]

1. *Journal of the American Medical Association*, 1997; 278: 1039-1044.

LONDON BOROUGH OF
CROYDON

invite applications from suitably qualified and experienced **TEACHERS** of—

TECHNICAL SUBJECTS
MATHS
SCIENCE
GERMAN/FRENCH

Application forms obtainable from and returnable to the **Director of Education (TAS), Taberner House, Park Lane, Croydon CR9 1TP.**

Telephone: 01-686 4433, Ex. 2674 or Ex. 2290 or Ex. 2376.

Secondary Vacancies

The Authority would be pleased to receive applications from experienced teachers who are qualified in the following subjects:—

Design and Technology Home Economics Needlecraft

Appointments will be made to a scale 1 post in the Authority's general teaching service, Inner London Allowance (£402) payable in addition to the Burnham salary.

For the appropriate application form please write to the Education Officer (TSB), Room 67, The County Hall, London SE1 7PS, stating whether the application is for a first appointment or not, or you are welcome to telephone 01-433 2101 for further details.

METROPOLITAN BOROUGH OF Rochdale

EDUCATION DEPARTMENT

SPECIAL EDUCATION

HEYWOOD TUTORIAL CENTRE
NEW CHURCH SCHOOL
New Street, Heywood OL10 1AE
Tel.: Heywood 68548

SCALE 1

plus Special Class Allowance.
Required to be part of a team of 3 teachers and 1 N.N.E.B., with 1 Teacher-in-Charge, and maintaining close contact with the Education Psychologist, for a small Tutorial Unit in Heywood, which provides for children of primary age range with behaviour problems. Maximum number on roll, 24.
The successful applicant needs to be capable of remedial teaching and of developing an insight into behavioural problems. This post offers valuable experience for anyone wishing to make a career in this aspect of education.

Application forms (please enclose a footscep stamped addressed envelope) are available from the Chief Education Officer, Education Department, Municipal Buildings, Manchester Old Road, Middleton, Manchester M24 4EA, to whom they should be returned on completion. Closing date: Monday 24th July 1978.

MIDDLE

ST. WILFRID'S R.C. (11-13)
Holstein Avenue, Rochdale OL12 8DL
Tel.: Rochdale 40893
RE-ADVERTISEMENT

MUSIC

Required for September next or January 1979.
Scale 2 post available for suitable candidate, but College leave is invited to apply.
Applicants should be by letter immediately to the Head Teacher at the school, giving details of age, qualifications and experience, together with the names and addresses of two referees.
Previous applicants who have applied will be automatically re-considered.

HIGH

SIDDA MOOR (11-18)
Newhouse Road, Heywood, Heywood OL10 2NT
Tel.: Heywood 68438
RE-ADVERTISEMENT

SCALE 1 PHYSICS

Within the Faculty of Science.
Sixth form work available for suitable candidate.
Application forms (please enclose a footscep stamped addressed envelope) are available from the Head Teacher at the school, to whom they should be returned on completion. Closing date: Monday, 24th July 1978.

MOORHOUSE HIGH (14-18)
Kanyon Lane, Middleton, Manchester M24 2DG
Tel.: 01-634 8116
RE-ADVERTISEMENT

Required for September next at this Mixed Senior High School with 800 currently on roll and a complete range of examination courses.
(1) SCALE 1 COMMERCE
This vacancy is caused by the promotion of the present holder. The school has a well established department with an excellent record in all public examinations in typewriting and shorthand.

(2) SCALE 1 TEMPORARY ENGLISH
A range of examination work is available. The appointment is for one term.
Applications for both posts should be by letter immediately to the Headmaster at the school giving details of age, qualifications and experience, together with the names and addresses of two referees. Closing date: Friday, 14th July 1978.

Educational Appointments

All the following posts are required for September, 1978.

WILLOWGARTH HIGH SCHOOL
Brierley Road, Grimsby, Grimsby
(11-18 Mixed Comprehensive)
Headteacher: W. D. Trotten

TEACHER OF MATHEMATICS
with ability to teach to 'A' level (Scale 1).

TEACHER OF RE AND ENGLISH
Scale 1. Sixth-Form work available for suitable candidate.

WORSBROUGH HIGH SCHOOL
Ardley Road, Worsbrough Dale, Barnsley
(11-18 Mixed Comprehensive)
Headteacher: S. Hughes

TEACHER OF BOYS PE
(Scale 1). An ability to teach Mathematics in the Lower School desirable.

PENISTONE GRAMMAR SCHOOL
Penistone, Sheffield
(1,500 Mixed Comprehensive)
Headteacher: M. A. Bould, BA

TEACHER OF SLOW
LEARNING CHILDREN
(Scale 1) to work mainly in the Remedial Department to teach General Subjects. The post would suit a Primary/Middle school trained teacher. Proficiency in teaching reading skills and/or basic Mathematics an advantage.

For the above posts please apply to the Headteacher at the school concerned giving full curriculum vitae and two referees (SAE, please).

For the appropriate application form please write to the Education Officer (TSB), Room 67, The County Hall, London SE1 7PS, stating whether the application is for a first appointment or not, or you are welcome to telephone 01-433 2101 for further details.

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COUNTY OF SOUTH GLAMORGAN

Required for September unless otherwise stated:—

SPECIAL
PERMANENT SUPPLY TEACHER FOR SPECIAL EDUCATION
Wales 110 Special School Allowance.
Experienced Teacher, preferably with additional qualifications in teaching of handicapped children, to teach in a wide range of special schools. Initially the post will be filled on a temporary basis. Salary: £4,000 p.a. plus Special Allowance.

TEACHER OF MATHEMATICS
with ability to teach to 'A' level (Scale 1).

TEACHER OF RE AND ENGLISH
Scale 1. Sixth-Form work available for suitable candidate.

WORSBROUGH HIGH SCHOOL
Ardley Road, Worsbrough Dale, Barnsley
(11-18 Mixed Comprehensive)
Headteacher: S. Hughes

TEACHER OF BOYS PE
(Scale 1). An ability to teach Mathematics in the Lower School desirable.

PENISTONE GRAMMAR SCHOOL
Penistone, Sheffield
(1,500 Mixed Comprehensive)
Headteacher: M. A. Bould, BA

TEACHER OF SLOW
LEARNING CHILDREN
(Scale 1) to work mainly in the Remedial Department to teach General Subjects. The post would suit a Primary/Middle school trained teacher. Proficiency in teaching reading skills and/or basic Mathematics an advantage.

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SECONDARY

Science continued

Scale 1 Posts

Scale 1 Posts

Scale 1 Posts

Scale 1 Posts

Scale 1 Posts

Scale 1 Posts

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ITON COLDFIELD
 joined in September. ITACILLER
 like INVILLEN and other Middle-
 school subjects, with boys 11-15
 years. Must be able to help with
 coach all school games.

BIOGRAPHY with "Music Teacher
required September, in boys
Preparatory School in Surrey
just by Young, qualified and
enthusiastic. Minimum Scale.
Recommendation available. Apply
Headmaster 050 678 772. Boys
Court School, Lehigh, near Net-
tles.

WILKINGHAMSHIRE
WILKINGHAM SCHOOL
High Wycombe
Qualified member of staff required
September, 1978, to teach IN-
dividually throughout the school (wide
plus to 13 plus) in preparation
(Common Entrance and Scholar-

WILTSHIRE
WINDYAS
Surrey Forest, Marlborough,
Wiltshire

and the applicant is not to be
HISTORY and other (100-
and or SCIENTIFIC, a single
and Schenckler in student (100-
for suitable applicant to take
of "hook" and take full part
other games and extra-curricu-
activities.

award one page for single person.
ary above Bureau.

REQUIRED for September qualified young TEACHER to HISTORY and GAMES. Could be a residential post. Apply Headmaster, Trillick Preparatory School, Truro.

WILKINS

take a full part in the life of the Roman Catholic boarding school.

PERNELL
ST. CATHEDRAL SCHOOL
LABORATORY DEPARTMENT
Required for September, a TEACHER of U.S. MATHEMATICS and

GRADUATE to teach **FRANCH**
any department of the school for

his address, home or business, Burnham St. John, Weymouth, Dorset, or to the Weymouth & Portland Harbour Commissioners, Weymouth, Dorset.

accommodation available for
color.
Write with details of experience
names of two referees to: The
Director, The Pilgrims' School,
Chester, N.H.

Preference given to applicants with some experience with art and assistance in games and outdoor activities.

ANTED for September 1978.
Qualified teacher in late French
to 12 + Common Entrance. 3
days a week. Surrey. Home
order. Please apply in writing
to the Headmistress giving names
of two referees. Box 115 3169
44 Times. WC1X 8EZ.

USIC

SEX
no. qualified MUSICIAN wanted
teach CLARINET. RECORDED
some TRANO.

Apply to the Director of
Windsor Lodge Preparatory
School, Chesham, Essex, Tele-
phone 0245 0351. The post will
be vacant in September.

BAHRAIN Gulf Technical College

Applications are invited for appointment as

SENIOR LECTURER in ACCOUNTING & MANAGEMENT STUDIES

to teach Accounting, Costing and Supervisory Management on OGC courses initially and to HND standard later, and to be responsible to the Principal Lecturer for administration of Accounting and Management Section. Candidates should have degree or appropriate professional qualification and not less than 5 years' teaching experience. Industrial or government experience desirable.

LECTURER GRADE II in BUILDING SCIENCE

to teach Applied Science and Mathematics to Building, Civil Engineering, Surveying and Orientation Courses, supervise and develop Laboratories, and assist with administration.

Candidates should have degree and minimum of 3 years' relevant teaching experience. Material Control Engineering experience desirable.

LECTURER GRADE I in BUILDING

to teach Building subjects, assist in administration and act as course tutor for Construction Technicians Courses. Candidates should have HND or appropriate professional qualification and at least 5 years' industrial experience. Teaching experience desirable.

Appointments for two years initially beginning September 1978 or as soon as possible thereafter.

TAX FREE SALARIES

Gulf Nationals:

Senior Lecturer BD 386.5-BD 443 per month
Lecturer Grade I BD 338-BD 381 per month
Lecturer Grade II BD 280-BD 370 per month

British Expatriates:

Senior Lecturer £10,830-£12,178 per annum
Lecturer Grade I £9,083-£10,352 per annum
Lecturer Grade II £7,434-£10,048 per annum

Expatriates also receive free furnished accommodation and passages.

Please write for further details and application form quoting Ref. GLF/TES, to the Recruitment Unit, TETOC (Technical Education and Training for Overseas Countries), 36/37 Grosvenor Gardens, London SW1W 0BS. Closing date for receipt of applications 28th July 1978.

Tetoc

OVERSEAS DEVELOPMENT

KNOW-HOW vital to developing countries

Specialist Teacher in Mechanical Engineering

Brazil

To assist with curriculum development and teaching facilities, liaise with industry, undertake staff training and some teaching; train local counterparts. Applicants should be MEng or E or have degree in Mechanical Engineering with teaching experience in strength of materials, hydraulics, etc. Appointment 2 years. Salary according to qualifications and experience plus tax-free overseas allowance. Superannuation rights may be safeguarded. (Ref 3174).

Expert in Agricultural Engineering

Thailand

To teach at postgraduate level and to undertake and supervise research. Applicants should have degree preferably a doctorate in agricultural engineering or related subject with teaching, industrial, and consultancy experience. Should have experience in at least: (a) agricultural physics with specialisation in soil-water-plant relationship or (b) soil and water engineering with specialisation in soil conservation. Should have an understanding of the agricultural needs of developing countries in Asia. Academic and practical experience in that region an advantage. Appointment 2 years. Salary according to qualifications and experience plus tax-free overseas allowance. Superannuation rights may be safeguarded. (Ref 3174).

These posts are wholly financed by the British Government under Britain's programme of aid to the developing countries. In addition to basic salary and overseas allowances, other benefits normally include paid leave, free family passages, children's education allowances and holiday visits, free accommodation and medical attention. Applicants should be citizens of the United Kingdom.

For full details and application form please apply, quoting reference stating post concerned, and giving details of age, qualifications and experience to:

Appointments Officer,
MINISTRY OF OVERSEAS DEVELOPMENT,
Room 301, Elmdon House,
Stag Place, London SW1R 6DL

HELPING NATIONS HELP THEMSELVES

OVERSEAS Appointments continued

SPAIN—Experienced E.L.T. teacher with post graduate taught for 10 years in secondary schools. He is now seeking a post in a similar position. Details of salary and conditions of service.

GREEK—Experienced teacher with post graduate taught for 10 years in secondary schools. He is now seeking a post in a similar position. Details of salary and conditions of service.

SPAIN—Experienced teacher with post graduate taught for 10 years in secondary schools. He is now seeking a post in a similar position. Details of salary and conditions of service.

Administration

Local Education Authority

CHESTER

SPECIALIST CAREERS OFFICER

£5,500 to £10,000 plus a salary supplement of £2,000 to £3,000

This additional post will strengthen the current team working throughout the County dealing with unemployed young people and special measures under the Government's initiative. A career counselling allowance is payable. Applications are invited from persons with a degree in Education, Careers Guidance or a related subject. Candidates should have at least 5 years' experience in the field of careers guidance. Closing date July 21.

DERBYSHIRE

COUNCIL CAREERS SERVICE

Applications are invited for the following posts in the Borough's Careers Service:

SENIOR COUNCIL CAREERS OFFICER—based at County Office, Mallock, Derbyshire. Salary £5,500 plus £2,000 salary supplement.

COUNCIL CAREERS OFFICER—based at County Office, Mallock, Derbyshire. Salary £4,500 plus £1,000 salary supplement.

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DURRY

LONGSTAFF COLLEGE OF
TECHNICAL EDUCATION

ESTABLISHED IN 1961, the College is responsible for the maintenance and upkeep of buildings and grounds. It is a large, modern, well-equipped institution. Details of salary and conditions of service.

DORSET

COUNCIL CAREERS SERVICE

Applications are invited for the following posts in the Borough's Careers Service:

SENIOR COUNCIL CAREERS OFFICER—based at County Office, Mallock, Derbyshire. Salary £5,500 plus £2,000 salary supplement.

COUNCIL CAREERS OFFICER—based at County Office, Mallock, Derbyshire. Salary £4,500 plus £1,000 salary supplement.

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